THE BOSTON
Medical and Surgical
JOURNAL

VOLUME 193 AUGUST 6, 1925 NUMBER 6

ORIGINAL ARTICLES

HYPERTENSION AND LONGEVITY

BY HAROLD M. FROST, M. D., BOSTON, MASS.

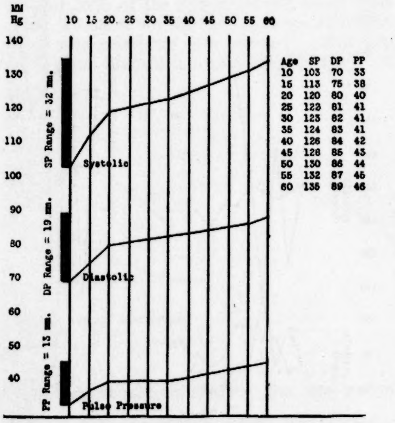
Assistant Medical Director, New England Mutual Life Insurance Co.

THE investigation of arterial hypertension, of its cause and effect, of its significance in relation to human longevity, is as yet in the chrysalis stage. Practically twenty years cover the period in which its clinical importance has been acknowledged; while in life insurance medicine its possible significance has been appreciated but a decade. The mystery of cardio-vascular physiology, the difficulties inherent to its study, have rendered slow and tedious the attempt to solve the hypertension enigma. Progress has been made along certain broad lines in the grouping of hypertension, in its correlation with cardiovascular pathology, in its control during the intermittent or permanent stages. Yet the conflict of opinion as to what constitutes the normal arterial pressure; the incessant exaggeration and deprecation of the significance of minor or moderate variations from an assumed normal; the variety of causative factors which have been involved in the absence of definite indications of cardio-vascular or renal disease: all these bear incontrovertible testimony of the undeveloped and chaotic condition of our knowledge.

My interest in this subject has been aroused largely through a limited association with life insurance medicine. The medical departments of life insurance companies enjoy an unparalleled opportunity to observe and study the development, progress and termination of arterial hypertension. At their disposal lies a mass of human material, such as no other institution commands. They are keenly alert to their opportunity and as in the course of time their experience matures, will be able to speak with authority and certainty, to enhance our understanding of this abstruse subject.

I do not intend to discuss intensively the etiology or treatment of hypertension in general, but purpose to set forth the results of observation and study of the material in the records of the Medical Department of the New England Mutual Life Insurance Company, and to a lesser degree the results of the combined experience of other companies. The New England Mutual material, that portion of it which I have selected for use, comprises 2568 cases, reported over a period of six years, 1919-1924 inclusive. Of these, 400 cases have been examined with particular reference to the condition of the cardiovascular system and kidneys, by clinicians rating well above the average in ability. The deductions which follow are based particularly upon a study of this latter group and upon my own observations and are merely an expression of my personal opinion.

What constitutes arterial hypertension? To answer this one must obviously premise the normal arterial pressure. Is the normal equivalent to the average? If so, life insurance medicine offers authoritative evidence as to normality. Chart I illustrates the average variation of systolic, diastolic and pulse pressures with advancing age, by five-year periods, from age 10-60 inclusive. It is based upon the figures compiled by Mr. Arthur Hunter, Chief Actuary of the New York Life Insurance Company, from observations by several companies upon approximately a quarter million healthy individuals in the United States and Canada[1]. A glance at the curves indicates that with advancing age there



Age	SP	DP	PP
10	103	70	33
15	113	75	38
20	120	80	40
25	122	81	41
30	123	82	41
35	124	83	41
40	126	84	42
45	128	85	43
50	130	86	44
55	132	87	45
60	135	89	46

CHART I

The average variations of systolic, diastolic and pulse pressures with advancing age, ages 10-60, inclusive.

is a gradual increase of systolic and diastolic pressures, the increase of the systolic pressure exceeding that of the diastolic, with a corresponding increase in the pulse pressure.

The attention immediately focusses upon two features of this variation. In the first place, the increase of the three pressure elements is much more gradual and less extensive than one would expect from the general clinical conception. Over the fifty-year period the systolic pressure rises but 32 mm.; the diastolic, 19 mm.; the pulse pressure 13 mm. In the second place, approximately one-half the increase occurs in the 10-20 year period. In the 20-60 year period the rise is very gradual, amounting approximately to 2 mm. per five years for the systolic pressure, and 1 mm. for the diastolic and pulse pressures.

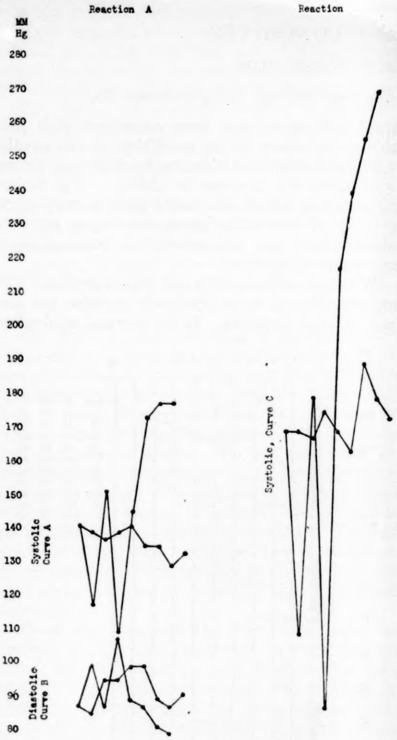


CHART II

Systolic, Curve A: The average variation of systolic pressure, during the cardio-respiratory test.
Diastolic, Curve B: The average variation of diastolic pressure during above test.
Systolic, Curve C: An extreme illustration of the variation of systolic pressure during above test.

These figures may be accepted as representing the average arterial pressure in this country. However, to claim for them the attribute of normality, is another proposition. Many factors, physical and environmental, exert their influence upon arterial pressure: such for instance as height and weight, nervous stability, occupation and climatic conditions. The diurnal variation is well established. Every clinician has noted the rhythmic fluctuation of pressure in response to ordinary respiration. He has observed in individuals of unusual nervous instability the hypertension following slight physical exertion, or during excitement; the 10-20 mm. bound that may result from the mere effort of talking. He has observed in the same individual a normal pressure in the morning, a hypertension in the afternoon; or a hypertension at a certain hour on one day and a normal pressure at the same hour of a subsequent day. It is possible with any individual, to effect within a few moments extensive variations of pressure upward or downward, at will, and to a degree perhaps but little appreciated.

For illustration, attention is called to Chart II, in which are plotted the pressure variations of two individuals while undergoing the Cardio-Respiratory Test. The description of this test was recently published in the BOSTON MEDICAL AND SURGICAL JOURNAL[2], [3]. These variations are effected simply by changes in intrathoracic pressure and by blowing through a spirometer. Reaction A, Systolic Curve (A), represents the average variation of systolic pressure which may be produced at will, in any individual. Reaction A, Diastolic Curve (B), represents the average variation of the diastolic pressure, as determined by Dr. H. H. Amiral. It will be noted that the systolic pressure fluctuates from a low point of 110 mm. to a high point of 178 mm.: a range of 68 mm.; and that the diastolic pressure ranges from 80-108 mm.: a total fluctuation of 28 mm. Reaction B, Systolic Curve (C), is introduced because it exemplifies the most extensive variation of systolic pressure that has ever come to my attention. It fluctuated from a low point of 88 mm. to a high point of 270 mm.: a range of 182 mm.

Bearing in mind this evidence of the instability of arterial pressure, the ease with which it responds to stimulus, surely it would be foolhardy to insist upon any rigid limit for normality; to say to every individual of 40 years, "Your systolic pressure should be 126 mm., which is the average for your age"; or, "Your pressure should be 140 mm., your age plus 100." It would be equally unwise to assume hypertension in the case of any individual after only hasty and incomplete observation: in the case, as an extreme instance, of a business man who consults you at the end of a strenuous day, a day of unremitting mental strain, bustle and possibly altercation, barely able to leave his office in time to keep his appointment with you.

In estimating the normal pressure I believe that every case must be considered on its own merits. As a foundation, it appears logical to select the average pressures. They were compiled from observations on a large number of individuals, in all the walks of life, of all mental and physical types, of all occupations and localities. Working from this foundation, studying the mental and physical characteristics and habits, estimating the degree of strain, occupational and otherwise, one may approximate a sane deduction as to the normal pressure in a given case.

In my opinion the normal variation above the average pressure will rarely exceed 15 mm. for the systolic and 10 mm. for the diastolic, and may reach these limits only in late adult life. This opinion is based largely on the fact that life insurance statistics, as compiled by Fisher[4] and Rogers & Hunter[5] indicate that an increase of systolic pressure in excess of 10 mm. above the average, without other signs of physical impairment, carries with it a definitely increased mortality. If it were possible to determine the arterial pressure which is associated with the lowest mortality, for each year of age, we should have a comparatively accurate standard of normality. Unfortunately this is not yet possible as insufficient time has elapsed since the determination of blood pressure became a routine procedure in life insurance examination. Statistics bearing on this problem will surely be available in the near future.

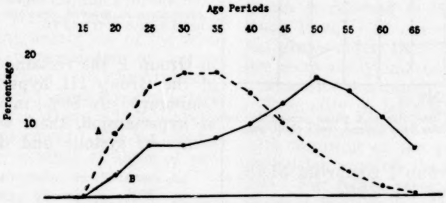


CHART III

Curve A: The percentage (distribution) of 146,992 individuals examined, by five-year periods from age 15-65, inclusive.

Curve B: The distribution (by percentage) of hypertension in the five-year periods (2568 cases).

(For interpretation, see text.)

Coming more directly to the discussion of hypertension, a few general analytical considerations are in order. For purposes of discussion I am arbitrarily considering as hypertension any systolic pressure which exceeds the average by 15 mm., and any diastolic pressure exceeding it by 10 mm.

Out of 146,992 individuals examined over a period of six years there were 2568 cases of hypertension: an incidence of 1.74%. This figure by no means represents the incidence in the population at large for it must be remembered that the above group, with but few exceptions, comprises those who are presumably in good health, unconscious of physical impairment to the extent that they confidently submit to examination for life insurance. From this group are largely excluded those with known cardio-vascular or renal impairment, the inclusion of whom might result in a slightly higher hypertension incidence. This figure however gives a fair idea of the frequency with which hypertension may be observed in the average healthy mass of the population. It compares favorably with the experience of the Metropolitan Life Insurance Company of New York for the year 1922. Out of a total of about 500,000 examinations, they found that over 8,000 applicants had a systolic pressure in excess of 140 mm., an incidence of approximately 1.6%[6].

Chart III illustrates the percentage distribution of hypertension (2568 cases) by five-year groups (Curve B). To be interpreted properly this curve must be considered in relation to the interrupted curve (Curve A). This latter represents the age distribution, by five-year groups, of the total number examined (146,992). It appears that 76% of the examinations and 36% of the hypertensions fall within the period previous to age 40; and that 24% of the examinations and 64% of the hypertensions occur after age 40. In other words, the incidence of hypertension was relatively low in early adult life (0.08%) and high in late adult life (4.6%). It attained its maximum during the age period 45-55.

The variation of pressure in these cases of hypertension is illustrated in Chart IV. There is a gradual increase in both systolic and diastolic pressures through the successive five-year periods: the rate of increase for both being about equal. The systolic pressure continues on a plane about 31 mm. above the average. The diastolic pressure shows an average elevation of 11 mm. The pulse pressure is maintained at a fairly constant high level, averaging 62 mm.

These hypertensions fall into three main groups, as illustrated in Chart V. *Group I* includes those with a high systolic, a low diastolic and a high pulse pressure; *Group II,* those with a high systolic, a high diastolic and an average pulse pressure; ***Group III,*** those with a high diastolic, a relatively low systolic and a low pulse pressure. Referring to the analysis in Chart VI, it is apparent that Groups I and II vary inversely in incidence with age: Group I prevailing in early life, Group II later. Group III, for unknown reasons, possibly due in part to faulty technique in reading, maintains a fairly constant low level of incidence (3.5%), throughout the entire age period. In the entire series (2568 cases), Group I comprises 51.7%; Group II, 44.4%; Group III, 3.9%.

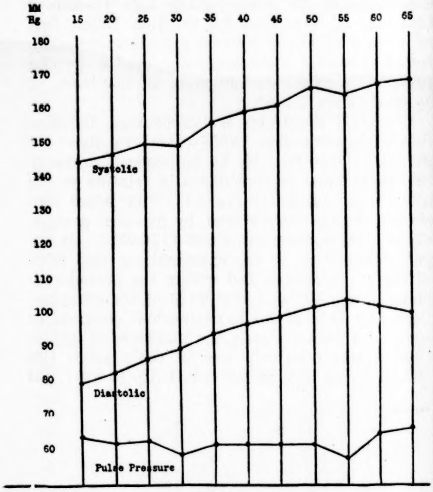


CHART IV

The variations of systolic, diastolic and pulse pressures, in 2568 cases of hypertension, by five-year groups, ages 15-65 years, inclusive.

As previously stated, 400 of the cases were reported by our chief examiners, physicians selected because of their high professional attainments. For detailed analysis, therefore, these cases afford a more reliable basis than the larger series (l. s.). They present the same group relationships, as seen in the following table:

Age	Number		Group I		Group II		Group III	
15-40	214	53.5%	148	69.2%	62	28.9%	4	1.9%
41-65	186	46.5%	81	43.5%	94	50.5%	11	6.0%
Total	400		229	57.2%	156	39.0%	15	3.8%

It is noted that in this smaller series 53.5% occur during early adult life, and 46.5% during later life. They are grouped: Group I, 57.2% (l. s., 51.7%); Group II, 39.0% (l. s., 44.4%); Group III, 3.8% (l. s., 3.9%). In early adult life: I, 69.2%; II, 28.9%; III, 1.9%. In later life: I, 43.5%; II, 50.5%; III, 6.0%. It is evident that in this series the Group III type is more prevalent in late than early adult life, which was not apparent in the larger series.

The hypertension in 6% of these cases was temporary, subsequent observations revealing normal pressures. Of these, 66% were included in Group I, the remainder in Group II. None of the Group III hypertensions proved to be temporary. In 80%, incident to the subsidence of hypertension, there was a simultaneous decrease of systolic and diastolic pressures and pulse rate. In both groups the average decrease of systolic pressure and pulse rate was similar (S. P.: I, 19 mm.; II, 20 mm.—P. R. decrease; I, 14; II, 20). The decrease of diastolic pressure, as would be expected, was more marked in

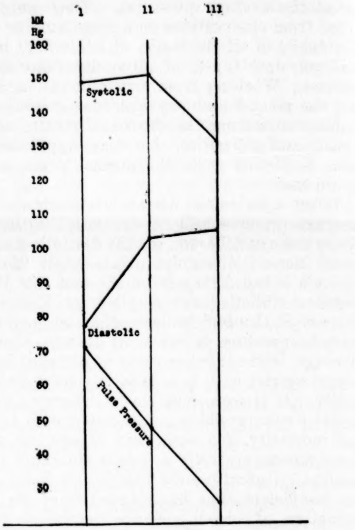


CHART V

Variations of systolic, diastolic and pulse pressures in hypertension groups I, II and III.

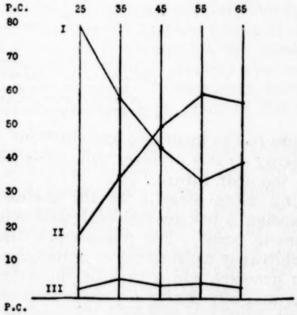


CHART VI

Percentage variations of hypertension groups I, II and III, by ten-year groups, ages 15-65 years, inclusive.

Group II (D. P. decrease: I, 7 mm.; II, 14 mm.).

Sixty-seven of the series, or 16.8% gave evidence of renal disease on chemical and microscopic examination of the urine, about equally divided between Groups I and II. (I, 33; II, 32; III, 2). Albumin alone prevailed in Group I; albumin with casts, in Group II. Ten cases (2.5%) presented signs of peripheral arteriosclerosis: 70% of these of the Group II type.

Deducting these cases of transient hypertension (6%), renal disease (16.8%) and arteriosclerosis (2.5%), there remain 299 cases (74.7%) of hypertension, without concurrent evidence of causation, which may be termed "essential." Of these, 237 (79%) presented additional abnormal signs, single and multiple, as follows:

Heart murmur	66.9%
Rapid pulse (90+)	38.5%
Hypertrophy of heart	23.4%
Irregular heart	9.3%

In the series of 400 cases there was a family history of cardio-vascular or renal disease in 28%, apportioned as follows: father only, 14%; mother only, 6.7%; father and mother, 3.7%; combinations of father or mother and brothers and sisters, 3.6%.

Summarizing to this point, it appears that in a large mass of our population, of that class which appreciates and desires life insurance, between the ages 15-60, enjoying the average health and unaware of any serious impairment, there is a considerable group, nearly 2% of the whole, who are subject to hypertension of varying types. A small proportion (6%) are transient. A limited number (2.5%) show signs of arterial degeneration. A larger group (16%) present evidence of renal impairment. The majority of them (74.7%), in the absence of signs of renal or vascular disease, may be considered as "essential" hypertensions; of whom, 79% present abnormal cardiac signs. They may be divided into three groups: Group I, with a high systolic, low diastolic and high pulse pressures, characteristic of early adult life; Group II, with high systolic, high diastolic and average pulse pressures, characteristic of middle to late adult life; Group III, with high diastolic, relatively low systolic and low pulse pressures, characteristic of late life.

It is with the "essential" type of hypertension that I am primarily interested, for I believe it represents the initial stages of that cardio-vascular degeneration which in time will manifest itself by the signs and symptoms of advanced, probably incurable, hypertensive disease. I believe that the only real hope of cure lies in attacking the process at this early stage; that here lies the main chance to promote longevity in this type of case. This early stage is seen commonly enough by life insurance examiners, but not so often unfortunately by the clinician, who is largely concerned with the ill. If these premises are correct, we have here a powerful argument in favor of periodic health examinations.

It is obvious that in evaluating a given case of hypertension, judgment must be cautious, well-balanced, sane. The first essential is to make sure of the actual degree of pressure elevation, with a due appreciation of the ease with which pressure may fluctuate. One determination, even several isolated readings, will rarely give an accurate idea. Only by frequent observations, over several consecutive days, after rest and work, after exercise and recreation, after physical and mental strain, may the clinician acquire an accurate conception of the nature of the hypertension to which his patient is subject. With this knowledge, fortified by all possible information as to the condition of the renal and cardio-vascular systems, as to other physical impairments which may have a deleterious effect, he is in a position to balance the factors which may cause or aggravate the hypertension and decide upon a sensible therapeutic régime.

The progress of an "essential" hypertension, its life history, are well portrayed in Charts V and VI, by the three groups previously described. It begins in early or middle adult life as a Group I type, with high systolic, low diastolic and high pulse pressures. It is not as a rule a constant hypertension, but manifests itself transiently, under conditions of physical or mental strain. It subsides promptly when such strain is relieved to what may be termed the "rest level." If not corrected, as the individual grows older, the "attacks" of hypertension are more easily induced, occur more frequently and subside less rapidly.

Gradually in later life, a new element intervenes: the elevation of the diastolic pressure, with lowering of the pulse pressure. The hypertension acquires the Group II characteristics. The "rest level" rises, in excess of the normal increase incident to advancing age. Aggravations of pressure continue in response to strain, but they tend to become less extensive than in the earlier stage and the return to the "rest level" more sluggish. At any time now the evidence of hypertensive disease may become apparent: sooner, for unknown reasons, in one person than in another. At the end of this stage the "rest level" has attained a permanent, abnormally high plane. In some individuals there is still a considerable aggravation of pressure during strain. These, I believe, are a prolific source of the deaths from cerebral hemorrhage. In other individuals the response to strain is no longer excessive and indications of impending cardio-vascular weakening may become evident.

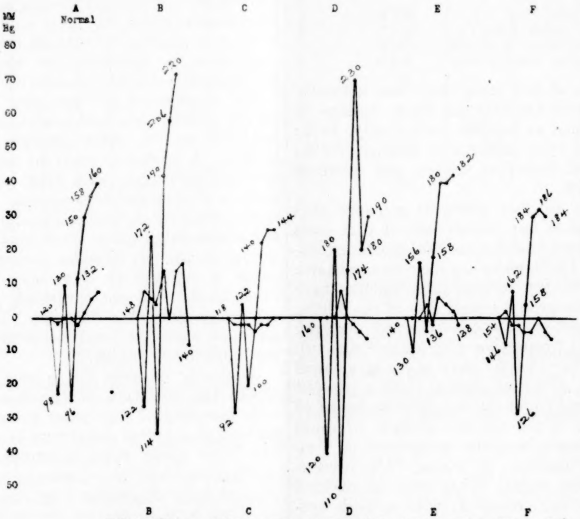
Finally the hypertension merges into the terminal stage, the Group III type. The diastolic pressure remains high. The systolic is relatively low, with an abnormally low pulse pressure. The cardio-vascular system is no longer able to support its excessive load, begins to weaken under the strain. Its fate is obvious.

In short, I believe that "essential" hypertension is at first an irritative phenomenon, without serious cardio-vascular deterioration; that certain individuals, because of their peculiar physical and mental make-up, acquired, inherited or both, are subject to an abnormal cardio-vascular reaction to strain. As the strain persists, and the cardio-vascular system sustains repeated, increasingly frequent and prolonged shocks, vascular deterioration develops, which in the absence of intercurrent disease, progresses to a circulatory catastrophe. It follows that the Group I type holds forth the greatest possibility of cure or amelioration; that the Group II type is less favorable; that the Group III type offers the least likelihood of relief.

As previously stated it is essential in a given case to obtain an idea of the sensitiveness of the cardio-vascular system, of the ease with which the pressure fluctuates, and of the extent. It is also of value to be able to determine at subsequent intervals the degree of alteration in this sensitiveness, as an indication of the progress under treatment. This applies to any type of hypertension. The best way to do this is to observe the behavior of arterial pressure while actually applying strain to the cardio-vascular system. The most satisfactory method of applying such strain lies, I believe, in the Cardio-Respiratory Test. To illustrate this, attention is directed to the following cases and their pressure reactions in response to the test.

CHART VII

GROUP I TYPE, HYPERTENSION



	B		C		D		E		F	
	Before Test	After. Test	Before Test	After Test	Before Test	After Test	Before Test	After Test	Before Test	After Test
SP =	148	140	118	118	160	152	140	138	154	146
DP =	64	86	88	86	90	90	86	88	84	86
PR =	90	114	67	68	96	90	76	76	72	66

GROUP I: CHART VII

Reaction A—

This represents the normal reaction of an individual with a normal pressure and is inserted as a standard for comparison.

Reaction B and C—

These are the reactions of a man of 36 years, taken five days apart. There were no signs of physical impairment other than a questionable hypertrophy and a systolic murmur. At the first examination this murmur was audible over the whole praecordia and in the left axilla, loudest at the apex. At the second examination it could be detected only in the recumbent position, sharply localized at the apex. At the first examination the subject was obviously laboring under a high degree of excitement. His systolic pressure was high (148 mm.), his pulse pressure high (64 mm.) and his pulse rate increased (90). His reaction to the test, Reaction B, indicated beyond a doubt that his cardio-vascular system was unduly sensitive to irritative stimulus, resulting in an excessive fluctuation of pressure.

Comparing this with Reaction A, the normal, the abnormality is at once apparent. The base-line level (the level to which the systolic pressure returns between each of the steps of the test), is particularly unsteady, fluctuating up and down over a range of 24 mm. The reaction curve fluctuates over a range of 106 mm., the pressure soaring in the final step to 220 mm.: far in excess of the normal. The pulse rate increases during the test to 114. These signs we have come to recognize as typical of cardio-vascular irritability, of excessive reaction to strain.

Appreciating the probable role of excitement in this case, a second examination was made five days later. The picture was entirely changed. Pressure and pulse rate were normal. The reaction to the test, Reaction C, was normal without any of the signs of irritability apparent before. The heart murmur (as usual) was markedly less intense.

We interpreted these findings as indicating that the cardio-vascular system of this individual was abnormally sensitive to excitation, responding with a transient hypertension; that in the absence of excitation his pressure was normal. The possibility of hypertrophy suggested that these "attacks" of hypertension were frequent and had already made necessary an increase in motive power.

Reaction D and E—

The reactions of a man of 45 years, taken four months apart. He was working fourteen hours a day, under intense mental strain, without exercise or recreation. At the first examination there was a slight hypertrophy of the heart, with a faint systolic murmur at the pulmonic area. The systolic pressure was 160 mm.; the pulse pressure 70 mm.; the pulse rate 96. During the test the systolic pressure, Reaction D, fluctuated over a range of 120 mm., attaining in Step Six a level of 230 mm. As it was considered unwise to push the pressure so high, in the next two steps the strain was reduced, with a corresponding decrease in the pressure response. Here again an excessive sensitiveness of the cardio-vascular system was apparent. While the subject did not appear excited, it was felt that nervous excitation might be partly responsible for the hyperactivity.

The subject was placed under medical supervision, with the idea of reducing the strain under which he labored by a sensible readjustment of work, rest, exercise and recreation. He faithfully adhered to his instructions. A month later he was again examined. While his pressure and pulse rate were normal (S-138, D-90, PR-84), his reaction to the test still indicated an excessive response to strain. A third examination was made about three weeks later. His pressure and pulse rate continued normal, but he still reacted excessively, though to a lower degree than before.

The final examination was made four months after the original. The reaction to the test, Reaction E, conformed in all respects to the normal. The heart murmur could not be heard, or even elicited. The examiners could detect no hypertrophy.

We interpreted this as another case of early intermittent hypertension, aggravated by too close application to business, beginning to affect the heart. It appeared that by correction of habits and reduction of strain, the irritability of the cardio-vascular system was allayed, permitting a return to normal function.

Reaction F—

The reaction of a man of 57 years. There was a faint systolic murmur heard only at the base. The systolic pressure was 154 mm.; the pulse pressure 70 mm.; the pulse rate 72. This reaction is introduced particularly to illustrate the method of evaluating the significance of a border-line hypertension. This pressure, judged by even the lowest of normal standards, was but little above the limit of normality. The reaction gave no evidence of irritability or excessive response. The terminal fall in systolic pressure and pulse rate suggested that the subject may have been mildly excited before the test; that this excitation disappeared during the test; that the usual systolic pressure was apt to be nearer 146 mm. than 154 mm. In other words the reaction indicated that the pressure was normal for this individual.

Here then are three cases of hypertension of the Group I type. The reactions of two of them give definite evidence of abnormal cardio-vascular sensitiveness to strain, which calls for corrective measures, which in one case has proved amenable to correction. The reaction of the third case, admittedly a border-line hypertension, does not indicate any need for treatment. As previously stated, it is with this type of hypertension, at this early stage, that the greatest benefit may be expected from treatment.

GROUP II: CHART VIII

Reaction A—

The standard normal reaction, for comparison.

Reaction B—

A man of 41 years. There was a moderate hypertrophy of the heart, with a systolic murmur, localized at the apex. In the reaction curve the systolic pressure, in the final steps, rose far in excess of the normal, to a maximum of 246 mm. The pulse rate was normal, slightly decreased at the end of the test. During the test, systolic, diastolic and pulse pressures increased slightly. This was interpreted as a Group II hypertension, without particular evidence of nervous excitation. Under strain the cardio-vascular response was vigorous, but greatly in excess of the normal: indicating an irritable system, still capable of an excessive expenditure of energy.

Reactions C and D—

A man of 72 years. There was moderate hypertrophy, evidence of peripheral arteriosclerosis. The urine contained albumin, casts and pus. The prostate was hypertrophied. At the first examination, his reaction, Reaction C, while giving no particular evidence of irritability, did indicate a very slight degree of cardio-vascular weakness, a tendency to weaken under strain. This was deduced from the falling of the base-line pressure with a slight contraction of the pulse pressure, and an increase of 16 points in the pulse rate.

About ten months later the last examination was made. Meanwhile the prostate had been removed and the subject had remained under medical supervision with the object of reducing his hypertension. The final reaction, Reaction D, was quite normal except for the hypertension, with no indications of cardio-vascular irritability or of the inability to withstand strain evident in the first reaction.

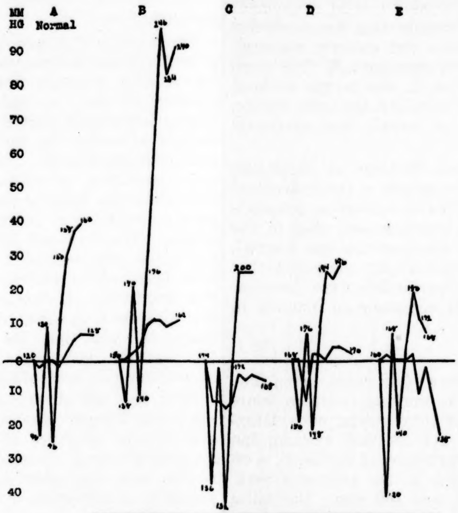
This was interpreted as a Group II hypertension, which had progressed beyond the irritable stage and had become permanent, without intermissions. Deterioration of the renal and cardio-vascular systems was apparent. As was to be expected, treatment had not effected any reduction of the hypertension, though it appeared to have increased the cardio-vascular strength. A constant cardio-vascular overload was apparent, which was being carried in a satisfactory manner.

Reaction E—

A man of 49 years. There was a faint systolic murmur localized at the apex. The reaction, Reaction E, was remarkable in that it disclosed, instead of irritability, a considerable degree of cardio-vascular weakness. The base-line systolic pressure fell 22 mm., while the diastolic rose 6 mm.: a contraction of the pulse pressure of 28 mm. In the reaction curve, Steps Seven and Eight, the systolic pressure fell off 12 mm.

This was a hypertension of the Group II type, with evidence of impairment of cardio-vascular function. The lowering of the systolic, increase of the diastolic and contraction of the pulse pressures, while undergoing strain, suggested that this hypertension was bordering upon the Group III type and would shortly so develop.

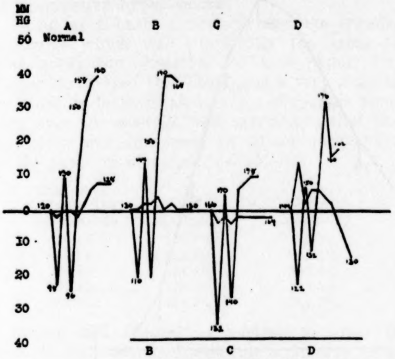
Here are three cases of the Group II type. The first approximates the Group I type in that the phenomenon of cardio-vascular irritability is prominent, which may be amenable to correction. The second gives no indications of irritability, but appears to be a permanent hypertension without as yet any diminution of the



	B		C		D		E	
SP=,	150	162	174	168	168	170	160	138
DP=,	100	105	118	114	110	114	102	108
PR=,	80	76	68	84	76	76	66	66
	Before Test	After Test	Before	After	Before	After	Before	After

CHART VIII.
Group II type, hypertension.

cardio-vascular power, not amenable to correction. The third approximates the Group III type, in that cardio-vascular weakness is the outstanding factor with a tendency toward contraction of the pulse pressure. Treatment in this case would be aimed primarily at increasing the cardio-vascular tone rather than at reducing the hypertension.



	B Before Test	B After Test		C Before	C After		D Before	D After
SP=	130	130	SP=	166	164	SP:	144	130
DP=	110	100	DP=	120	122	DP:	100	100
PR=	80	84	PR:	80	90	PR:	82	90
PP=	20	30	PP=	46	42	PP:	44	30

CHART IX
Group III type, hypertension.

GROUP III : CHART IX

Reaction A—

Normal standard for comparison.

Reaction B—

A man of 48 years. Except for an occasional extra-systole, he presented only a high diastolic pressure with a pulse pressure of 20 mm. His reaction, Reaction B, was vigorous, normal in all respects. During the test his diastolic pressure fell, the pulse pressure increasing to 30 mm. In view of the normal response, it appeared that for him a pulse pressure of 20 mm. was not abnormal, and that probably it was nearer 30 mm. as a rule, than 20 mm.

Reaction C—

A man of 47 years. Examination was negative except for hypertension with a relatively low pulse pressure (46 mm.). His reaction, Reaction C, disclosed signs of cardio-vascular weakness. In the three final active steps the systolic pressure failed to rise to a normal level. The pulse pressure decreased to 42 mm. The pulse rate increased 10 points. Signs of irritability were absent. It was apparent that this cardio-vascular system had begun to weaken under the constant overload, no longer responding vigorously to strain. The indications for treatment were not so much to reduce the load as to increase the cardio-vascular tone.

Reaction D—

A man of 32 years. Examination was negative except for a relatively low pulse pressure (44 mm.). During the test his base-line pressure fell 14 mm.; his systolic pressure showed a marked tendency to fall in Step Seven and Eight; his pulse pressure contracted to 30 mm.; his pulse rate increased (Reaction D). Here were even more extensive indications of cardio-vascular weakening than in the previous case. And similarly the chief aim of treatment lay in attempting to increase the cardio-vascular tone.

Of these three cases, the first presented no definite indications of cardio-vascular weakness in spite of a low pulse pressure, and needed no particular circulatory treatment. He was somewhat overweight, flabby. An improvement in his general condition would doubtless have resulted in an increased pulse pressure. The other two cases gave evidence of impaired circulation which demanded treatment.

I have attempted, in a necessarily brief and sketchy manner, to present a picture of the three types of hypertension: of the characteristics of each, of the manner in which they merge, of the significance of their reactions to strain, of the gross indications for circulatory treatment. There remains for consideration the relationship of hypertension and longevity.

The discussion of longevity must of necessity be brief, because of the paucity of available statistics. As stated before, the routine observation of arterial pressure in life insurance examination is a comparatively recent procedure and not enough time has elapsed for any extensive compilation of data.

It will perhaps be of interest to consider first the normal trend of longevity. For this purpose I shall utilize the American Experience Table, a mortality table compiled many years ago, whereby life insurance companies have been able with safety to estimate the average length of life of individuals of the various ages and apply the proper premium for their insurance. This table is not the most accurate available, having been "padded" somewhat to ensure safety. Nevertheless it will serve our purpose for illustrating the trend of average longevity.

In Chart X, I have plotted the longevity curve of 1000 individuals, beginning at age 10, carrying them through to age 95. The curve holds fairly constant between ages 10-40, during which 219 of the 1000 have died. Thereafter the annual death rate increases rapidly, reaching its peak at about age 75, when only 287 of the 1000 are alive. The remainder die in the next 20 years.

Approaching the subject from a different angle, in Chart XI, I have plotted a curve of the annual death rate per 1000, for successive five-year periods, from age 10 (Curve A). The rate varies but little between 10-40 years, from 7.49-9.79 per 1000. Thereafter it increases more rapidly to age 75, at which age the mortality rate is 94.37 per 1000. In the next 20 years the rate increases by bounds, attaining the maximum of 100% at age 95.

CHART X

The longevity curve of 1000 individuals, beginning at age 10.
(American Experience Table.)

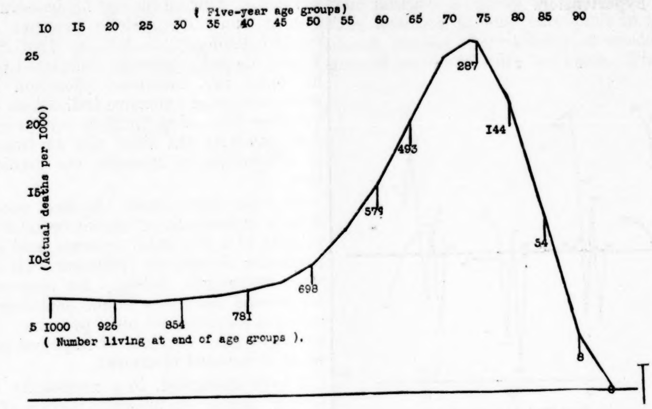
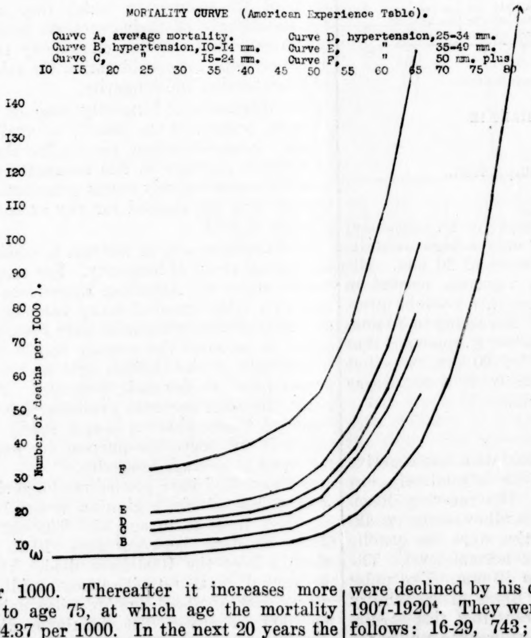


CHART XI.

MORTALITY CURVE (American Experience Table).



Number dying per 1000, Annually.

Age	Number
10	7.49
15	7.63
20	7.80
25	8.06
30	8.43
35	8.95
40	9.79
45	11.16
50	13.78
55	18.57
60	26.69
65	40.13
70	61.99
75	94.37
80	144.47
85	235.55
90	454.54
95	1000.

Dr. John W. Fisher, Medical Director of the Northwestern Mutual Life Insurance Company, has reported a series of 4165 cases of hypertension, without other serious impairment, which were declined by his company between the years 1907-1920[4]. They were divided by age groups as follows: 16-29, 743; 30-39, 731; 40-49, 1196; 50-60, 1495. Up to the year 1921, 507 of them had died of the following diseases:

Angina pectoris	20	Circulatory disease 257 (50.7%)
Arteriosclerosis	40	
Heart disease	88	
Apoplexy	109	
Nephritis	106	(20.9%)
Miscellaneous	144	(28.4%)

It is significant that circulatory disease (50.7%) and nephritis (20.9%) accounted for 71.6% of the deaths, while only 28.4% died from other causes: a pregnant illustration of the fate of progressive hypertension.

Using as a basis a table of average systolic pressures which was practically the same as that previously described in this paper, Dr. Fisher discovered that there was a very definite relationship between an increase of systolic pressure over the average and mortality; that the mortality was increased in direct proportion to the pressure elevation, as follows:

Mm. over average SBP for the age	Mortality	Extra Mortality
10-14	136.1%	36.1%
15-24	183.8%	83.8%
25-34	204.4%	104.4%
35-49	248.5%	148.5%
50+	414.7%	314.7%

Rogers and Hunter[5], reporting a series of 2838 hypertensions, discovered a similar relation between hypertension and mortality. Their findings were:

Mm. over average SBP for age	Mortality	Extra Mortality
10-25 mm.	146%	46%
26-35 mm.	188%	88%
36-50 mm.	248%	148%

In interpreting the above percentages it must be remembered that 100% represents the average mortality, according to whatever table is used. Thus the figure 136.1% mortality means that there were 36.1% more deaths than would be expected on the average. It is clear from the two sets of figures that with each increment of hypertension there is an increase in the extra mortality.

For a concrete example, let us assume 1000 individuals, 40 years of age. If these were average individuals, we would expect, according to the American Experience Table, that in this fortieth year the actual deaths would be 9-10. (Chart X, age 40, 9.79 deaths.) If, however, all these individuals had hypertension, according to Fisher's figures (confirmed by those of Rogers and Hunter), the number of deaths would be increased, as follows:

Mm. over average SBP for age	Extra mortality	Average number deaths per 1000	Actual number deaths per 1000 with hypertension
10-14	36.1%	9.79	13.32
15-24	83.8%	9.79	17.98
25-34	104.4%	9.79	20.01
35-49	148.5%	9.79	24.04
50+	314.7%	9.79	40.59

In order to give a more graphic idea of this increased mortality I have plotted in Chart XI the mortality curves of the various increments of hypertension: Curve A, the average; Curve B, + 10-14 mm.; Curve C, + 15-24 mm.; Curve D, + 25-34 mm.; Curve E, + 35-49 mm.; Curve F, 50 + mm.

So far, then, as our evidence goes it appears that systolic hypertension, without other impairment and presumably "essential" in type, is associated with a definite increase in mortality directly proportionate to the degree of pressure elevation; and that this mortality is very largely due to the development of circulatory and renal disease. So far as I am aware, no statistics have been published, illustrating the effect of diastolic hypertension upon mortality.

In conclusion, I wish to emphasize again what I have intended to make the key-note of this discussion: the prevention of hypertensive disease, and to this extent the promotion of longevity. Rational living becomes increasingly difficult. The rapid pace of our life, involving abnormal mental strain, the neglect of hygiene and the proper apportionment of rest, work, recreation and exercise,—the essence of health,—demands an increasingly heavy toll of the aggregative circulation. I am convinced that a very large proportion of hypertensive disease has such an origin, and that by recognition of the early signs, respecting and not belittling their possibilities, adopting the obvious simple methods of correction, it is within our power to prevent or at least retard its development, to reduce this fertile source of mortality.

REFERENCES

1 Hunter, Arthur W.: "Blood Pressure: What Affects It?" An address before Association of Life Insurance Presidents, Dec. 6, 1923.
2 Frost, H. M., M.D.: "The Response of the Cardio-Vascular System to Respiratory Exertion." Boston Med. and Surg. Jour., Vol. 191, No. 19, p. 853, Nov. 6, 1924.
3 Amiral, H. H., M.D.: "The Reaction of the Diastolic Pressure to Respiratory Strain." Ibid., p. 863.
4 Fisher, J. W., M.D.: "Risks Rejected for High Blood Pressure Only, Years 1907-1920." Proc. Assn. Life Insurance Medical Directors of America, Vol. IX, p. 63.
5 Rogers, O. H., M.D., and Hunter, A. W.: "Mortality Study of Impaired Lives." Ibid., Vol. X, p. 43.
6 Knight, A. S., M.D.: "Incidence of Increased Blood Pressure." Ibid., Vol. X, p. 57.

SUMMARY OF DEATH RETURNS

TELEGRAPHIC returns from 65 cities with a total population of twenty-seven million for the week ending July 25 indicate a mortality rate of 10.2 as against 10.9 for the corresponding week of last year. The highest rate (17.5) appears for New Orleans, La., and the lowest (4.4) for Grand Rapids, Mich. The highest infant mortality rate (147) appears for Norfolk, Va., and the lowest for Grand Rapids, Mich., and Jersey City, N. J., which reported no infant mortality,

The annual rate for 64 cities of 13.5 for the thirty weeks of 1925, against a rate of 13.2 for the corresponding period of 1924.—*U. S. Dept. of Commerce.*

THE INFLUENCE OF POSITION ON THE VITAL CAPACITY AND PERCENTAGE OF SUPPLEMENTARY AIR IN NORMAL PERSONS AND IN PATIENTS WITH LARGE SPLEENS*

BY FRANCIS T. HUNTER, A.M., M.D.

Medical Resident Physician, Collis P. Huntington Memorial Hospital, Boston. Now Medical House Officer Massachusetts General Hospital

Hutchinson in 1846[1] was the first to study carefully the vital capacity of the lungs and observed that it was greater sitting than when lying. In 1907 Bohr[2] made observations by a graphic method and measured the "residual" air as well as the total capacity in three normal subjects lying and sitting. The residual air was defined by him as the amount of air which the lungs can forcibly expire when forced expiration is begun with the lungs in a position half way between normal expiration and inspiration. Since then the work of Peabody[3] and others has shown that the vital capacity is decreased in cardiac decompensation and many investigations have been directed toward the establishment of normal values based on various body measurements, such as height, weight, stem length, chest circumference and body surface[4], [5], [6], [7], [8], [9]. Rabinowitch[10] found the capacity of the lungs to be less when individuals were lying than when sitting. Christie and Beams[11] observed that lying flat caused a 7% decrease in the capacity from that in the upright position in 80% of their normal subjects, and a decrease of 15% in all of the obese women measured.

The present investigation especially concerns the influence of position on the percentage that the residual and supplementary air form of the vital capacity. By supplementary air is meant that amount which can be forcibly expelled by the lungs when forced expiration is begun at the end of normal expiration. Measurements of this are to be preferred to measurements of the residual air on account of the greater constancy of determinations made on the same individual. The residual air, however, has been determined also in order to make comparisons with the figures obtained by Bohr[2].

While studying the vital capacity of patients with asthma it was observed that the supplementary air was almost nil in the recumbent position and became considerably increased, in many instances, when the patient sat up. This change was doubtlessly due to a drop of the diaphragm. The study suggested that similar determinations on normal persons of various builds were desirable, since with the exception of Bohr's[2] observations no measurements of either residual or supplementary air in the prone and sitting positions have been found recorded in the literature. It was thought that big abdominal tumors might influence the supplementary air so observations were made not only on twelve normal persons, but also on five patients with large spleens suffering from chronic myelogenous leukemia.

METHODS

All measurements were made on a Benedict portable metabolism apparatus with a writing needle attached to the counter weight, the tracing being recorded on paper drawn across the outer side of the spirometer by a kymograph motor. The subject reclined flat on a couch and after a short rest the mouth piece and nose clamp were adjusted and the individual breathed pure oxygen from the spirometer as in making a determination of the basal metabolism. When the respirations had become even and regular in character the drum was started and several respirations were recorded. At a prearranged signal the subject filled his lungs to their greatest capacity and then forcibly expelled all the air possible. After a short rest the procedure was repeated, and again a third time. The subject then sat up straight with feet on the floor and three similar tracings were made. From these graphic records the vital capacity, supplementary and residual air were measured. The maximum of the three vital capacities in each position was taken as the true capacity for that position. The average supplementary air in each position was then divided by the maximum vital capacity in that position and the result termed the percentage of supplementary air. Similarly, the average residual air was divided by the maximum vital capacity and the percentage of residual air for each position obtained.

THE INFLUENCE OF POSITION ON THE PERCENTAGE OF SUPPLEMENTARY AIR OF NORMAL PERSONS

Table I contains data on twelve normal individuals divided equally as to sex. Some of these subjects were chosen purposely in order to observe the influence of body build upon the percentage that the supplementary and residual air formed of the total capacity in the lying and sitting positions. As an index to the body build the percentage-weight for each subject is given. This was obtained by dividing the actual weight by the average weight for height, age and sex, as given for the ideal normal by the Metropolitan Life Insurance Company statistics. Thus, if the subject weighed 100 lbs. and the average weight for his height, age and sex is ideally 150 lbs., his percentage-weight would be 66%. For

---

*From the Medical Service of the Collis P. Huntington Memorial Hospital of Harvard University.

This paper is No. 48 of a series of studies on metabolism from the Harvard Medical School and allied hospitals. The expenses of this investigation have been defrayed in part by a grant from the Proctor Fund of the Harvard Medical School for the Study of Chronic Diseases.

the sake of comparison, Bohr's[2] data on his three normal individuals are added to the table and the percentage of residual air was calculated from his measurements. The remainder of the table is self explanatory.

From these few observations on normal subjects no conclusions can be drawn in regard to differences due to sex in the percentage the supplementary air forms of the total vital capacity in the lying and sitting positions. In the lying position this averaged 21% for the women and 24% for the men; and in the sitting position, 38% for the former and 37% for the latter. The lowest individual figures for each position occurred in the overweight subjects, (numbers 6 and 12) but no distinct correlation was found between body build and the percentage of supplementary air in either position. In respect to the shift in the percentage brought about by change of position, there likewise seems to be no relationship between the amount of the shift and the body build, as some tall thin subjects showed a considerable drop in the percentage of supplementary air on sitting up, while others did not. It was found that subject 10, who showed the least difference in the percentage of supplementary air in the two positions, had had pneumonia with empyema five years previously, and a radiograph of his chest at the time of the tests showed adhesions of the left pleura to the diaphragm. Measurements of the percentage that the supplementary air forms of the vital capacity in the lying and sitting positions, therefore, might be of value in determining whether the diaphragm is freely movable or not.

TABLE I

THE INFLUENCE OF CHANGE OF POSITION FROM LYING TO SITTING ON THE VITAL CAPACITY, PERCENTAGE OF SUPPLEMENTARY AIR AND PERCENTAGE OF RESIDUAL AIR IN NORMAL PERSONS

Subject	Age and Sex	Height in inches	Weight in lbs.	Weight per cent.	Vital Cap. in cc. Lying	Vital Cap. in cc. Sitting	Sup. Air per cent. Lying	Sup. Air per cent. Sitting	Resid. Air per cent. Lying	Resid. Air per cent. Sitting
1	26♀	60	110	95.8	2640	2820	21	41	30	49
2	37♀	67	142	96.5	3130	3460	25	40	36	50
3	29♀	65	130	93.0	2550	2720	23	42	30	49
4	25♀	64	115	85.3	3400	3590	19	40	28	48
5	23♀	68	118	78.0	2940	3170	23	38	32	46
6	31♀	66	169	122.0	3490	3760	16	28	21	36
Average (females)							21	38	29	46
7	25♂	72	161	95.0	4880	4980	38	44	45	51
8	34♂	66	141	96.0	3380	3940	20	35	28	44
9	38♂	70	158	95.5	4800	5060	23	36	29	44
10	28♂	67	126	85.0	3880	4130	26	33	34	40
11	39♂	73	134	73.0	4320	4590	27	44	34	50
12	32♂	66	155	112.0	4300	4810	13	28	20	34
Average (males)							24	37	33	44
(Bohr)										
VIII	33♂	68	114	74.0	3180	3350			33	44
VII	32♂	66	141	97.5	4310	4920			39	54
IX	50♂	67	154	97.5	3810	4010			34	48

In these individuals the percentage of residual air was likewise always greater in the sitting than in the lying position and the figures coincide closely with those calculated from Bohr's[2] data.

All of the twelve normal persons showed a greater total vital capacity in the sitting than in the lying position, the difference in the two positions reaching as much as 500cc. The same was shown by Christie and Beams[11]. It is of particular importance to bear this in mind when determining the capacities of patients, especially those with cardiac disease, as they have a tendency to assume a more recumbent position as compensation becomes established. If readings are made without maintaining a standard sitting position, increases in the vital capacity may be overlooked readily.

These data, then, indicate that normally not only the vital capacity, but also the percentage of supplementary and residual air are greater in the sitting than in the lying position.

THE INFLUENCE OF AN ENLARGED SPLEEN ON THE VITAL CAPACITY AND SUPPLEMENTARY AIR

Measurements of the vital capacity and the percentage of supplementary air were made in five cases of chronic myelogenous leukemia. The enlarged spleen filled more or less completely the left upper quadrant of the abdomen in four of these patients. In the fifth it was displaced and adherent in the pelvis and extended from the pubes to the umbilicus as a firm rounded tumor. The percentage of supplementary air in the first four patients averaged 15% in the lying position, and 34% in the sitting; which, compared with the figures in Table I, is below the normal for either sex. The vital capacities of these individuals were slightly below normal. In the fifth patient with the displaced spleen the percentage of supplementary air was 15%

in the lying and 25% in the sitting position at a time when the total vital capacity was low (1780cc.), but sometime later when the capacity was normal (3150cc.) the percentages were found to be normal, 22% and 40% respectively. It it were not for this last observation one might assume that the decrease in the percentage of supplementary air in these cases was due to the large spleen forcing the diaphragm upward; it is obvious, however, that such could not have been the case in the patient with the spleen in the pelvis.

A large spleen forcing the diaphragm upward might explain the low vital capacity occasionally observed at this hospital in cases of myelogenous leukemia. It cannot be the sole cause of the decreased vital capacity, however, for other cases than the five referred to above, which also had large spleens, showed normal capacities; and furthermore an upward displacement of the diaphragm by the spleen was not possible in the fifth case which showed a most marked decrease in the vital capacity just prior to irradiation treatment. Thus a large spleen *per se* does not appear to play any significant rôle in alterations of the vital capacity, but may be a definite factor in determining the percentage of supplementary air.

The observations concerning vital capacity in leukemia are not complete enough to be fully presented here. The data referred to above together with some observations which are being made under Dr. Minot's direction indicate that occasionally a considerable decrease in vital capacity may occur in this disease. The decreased capacities have occurred when the patient's metabolic rate was considerably elevated and when the peripheral blood showed much activity of the disease process. However, essentially normal capacities have been encountered when many myeloblasts occurred in the blood stream and the basal metabolism was much increased. A full report on the vital capacity in leukemia by other members of the staff of this hospital is anticipated.

SUMMARY

1. In normal persons, not only the vital capacity, but also the percentage of supplementary and residual air are greater in the sitting than in the lying position.
2. A large spleen may play a definite rôle in decreasing the percentage of supplementary air, but it does not necessarily cause the low vital capacity which occasionally occurs in myelogenous leukemia.

BIBLIOGRAPHY

1 Hutchinson, J.: On the Capacity of the Lungs and on the Respiratory Function with a View to Establishing a Precise and Easy Method of Detecting Disease by the Spirometer. Tr. Med. Chir., 29:137, 1846.
2 Bohr: Die funktionellen Anderungen in der Mittellage und Vitalkapazitat der Lungen. Deutsch. Archiv. f. Klin. Med., 88:385, 1907.
3 Peabody, F. W.: A Mechanical Factor in the Production of Dyspnea in Patients with Cardiac Disease. Arch. Int. Med., 20:433, 1917.
Peabody, F. W., and Wentworth, J. A.: The Vital Capacity of the Lungs and Its Relation to Dyspnea. Arch. Int. Med., 20:443, 1917.
4 Lundsgaard, C., and Van Slyke, D. D.: Studies of Lung Volume. I. Relation Between Thorax Size and Lung Volume in Normal Adults. Jour. Exper. Med., 27:65, 1918.
5 West, H. F.: A Comparison of the Various Standards for the Normal Capacity of the Lungs. Arch. Int. Med., 25: 306, 1920.
6 Dreyer, G., and Hanson, G. F.: The Assessment of Physical Fitness. New York, P. B. Hoeber, 1921.
7 Lemon, W. S., and Moersch, H. J.: Factors Influencing Vital Capacity. Arch. Int. Med., 33:136, 1924.
8 Myers, J. A., and Maeder, Le R. M. A.: The Vital Capacity of the Lungs of Four Hundred and Nineteen Firemen. Arch. Int. Med., 35:184, 1925.
9 Shepard, W. P., and Myers, J. A.: A Comparison of Vital Capacity Standards in Three Thousand, Five Hundred and Thirty-four Male University Students. Arch. Int. Med., 35:335, 1925.
10 Rabinowitch, I. M.: The Vital Capacity in Hyperthyroidism with a Study of the Influence of Posture. Arch. Int. Med., 31:910, 1923.
11 Christie, C .D., and Beams, A. J.: The Estimation of Normal Vital Capacity. Arch. Int. Med., 30:34, 1922.

CHROMAFFIN CELL TUMOR OF THE ADRENAL MEDULLA (PARAGANGLIOMA)*

BY ISOLDE T. ZECKWER, M.D.

TUMORS arising from the chromaffin cells of the adrenal medulla are distinctive in type and of rare occurrence. The few cases that have been reported appear under various designations, such as perithelioma, endothelioma, angioma, and chromaffin cell tumors. Alezias and Peyron[1] in 1908 first used the term paraganglioma to indicate all tumors arising from the chromaffin system, whether occurring in the adrenal medulla or the carotid gland or Zuckerkandl's organ.

All reported cases have been small tumors, distinctly benign, and have given rise to no symptoms. The tumor, therefore, is of no clinical significance, but merely represents a curiosity found by chance in the performance of autopsies, and as such the present case is reported. However, from the standpoint of the pathologist, the tumor is not without significance as exhibiting microscopic features which are peculiar to this type of tumor.

In general, the tumors are quite small, occupying most of the medulla, and by their growth produce extensive atrophy or destruction of most of the cortex. The cells are of epithelial type arranged in cords separated by anastomosing capillaries which constitute the supporting stroma. There is a tendency to formation of multinucleated cells and giant cells. Vacuoles and acidophilic cell inclusions are often mentioned. If the tissue is fixed soon after death, before much autolysis has occurred, in a solution containing chrome salts, dark brown pigment is seen within the cells as a result of their adrenaline content. Sometimes other elements of the adrenal medulla, as sympathetic formative cells, ganglion cells and non-medullated nerve fibres are a part of the tumor process.

---

*From the Department of Pathology, Harvard Medical School, and the Laboratory of Pathology, Long Island Hospital, Boston, Mass.

These tumors have quite often been noted in animals. In man, apparently only about twenty-five cases are on record, the first being reported by Berdez[2] in 1892. Most cases have appeared in the foreign literatures and include those of Manasse[3], Wiesel[4], Marchetti[5], Alezias and Peyron[6], Laignel-Lavastin and Aubertin[7], Suzuki[8], Hedinger[9], Kawashima[10], Wegelin[11], Herde[12], Herxheimer[13], and Thomas[14]. The only cases found in the American literature are by Wahl, 1914[15], Harbitz, 1915[16], and brief mention by Ewing[17] in his text-book of a case seen by him. Herxheimer's paper contains an especially thorough discussion of the histological features and summaries of the earlier cases.

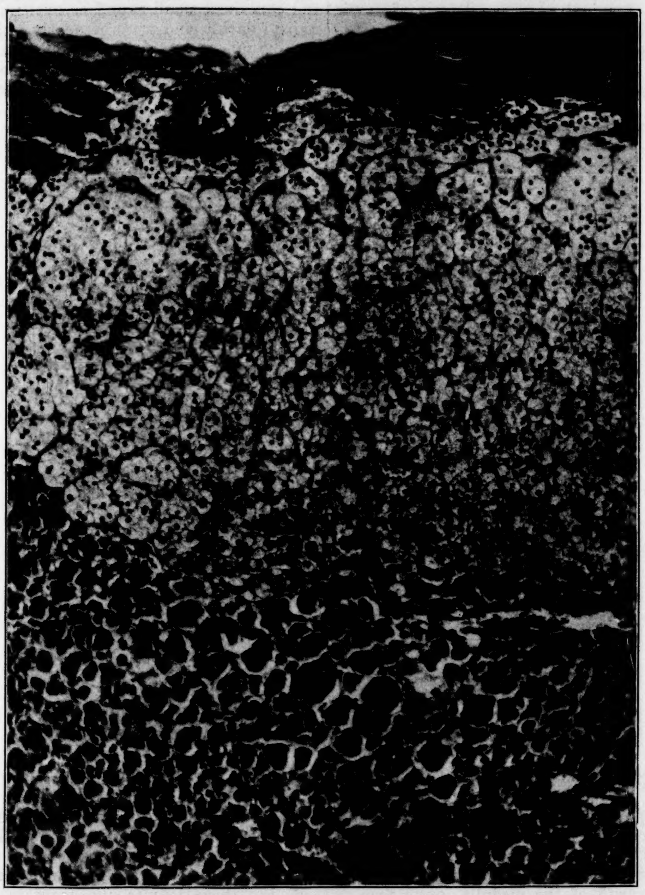


FIG. 1. Low power photomicrograph (150×) showing the general arrangement of chromaffin tumor cells beneath the cortex.

REPORT OF CASE

Clinical History: The patient was a woman, aged 56 years, whose complaint was that her right arm and leg had become paralyzed three months before admission. On examination she had partial voluntary motion of right arm and leg. The Wassermann test was positive. A loud systolic murmur was present over the aortic area and the aortic arch was wide. While walking she fell over suddenly, unconscious, with convulsions, and died twenty minutes later.

Autopsy: *Gross Anatomical Diagnoses*: Acute softening of right internal capsule and basal ganglia; old cysts of softening; neurofibromatosis of spinal nerves; sclerosis of aortic cusps; syphilitic aortitis; chronic adhesive pericarditis; oedema and congestion of lungs; old peritoneal adhesions; tumor of adrenal medulla.

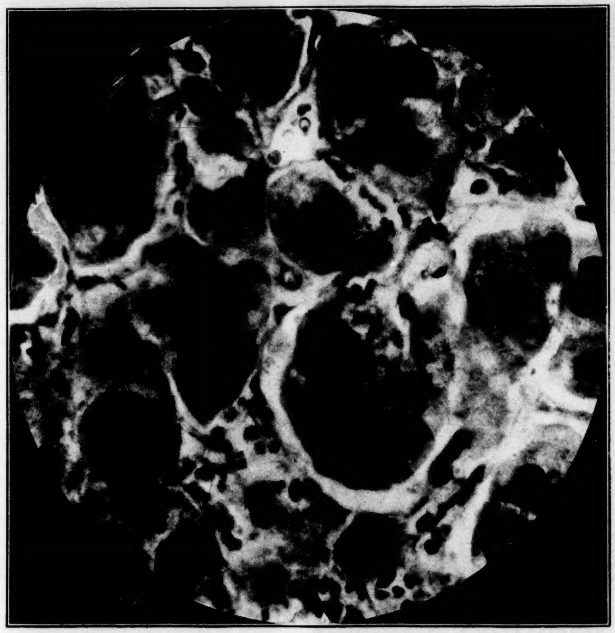


FIG. 2. High power photomicrograph (600×) showing the character of the tumor cells of the medulla, with their irregular and multiple nuclei, and loose arrangement between capillary channels.

Tumor of Adrenal: Grossly, the left adrenal was enlarged and appeared as an irregular ovoid mass measuring 4 x 3 x 2.5 c.m. On section it was seen that the enlargement was due to a growth of the medulla, quite firm in consistency, grayish red in color, and surrounded by a greatly narrowed zone of cortical tissue.

Microscopically, the entire medulla was composed of cells which in their general morphology and arrangement had the characteristics of chromaffin cells, but which were extremely atypical. (Fig. 1.) Various degrees of differentiation were exhibited by the cells. Although all were distinctly hyperplastic, cells showing evidences of more rapid growth were found to occur in foci, fairly well localized, and surrounded by more highly differentiated cells.

Where the cells conformed most nearly to the normal type, they occurred in orderly arrangement, forming narrow anastomosing cords, bordered on each side by dilated capillary channels. The cells were small as a rule and contained small round or oval nuclei which stained darkly and were of nearly uniform size. The cytoplasm was finely granular, and due to the poor definition of adjacent cell boundaries, and the close approximation of nuclei, the impression was given of a syncytium. Aside from the delicate reticulum associated with the capillaries, there was no stroma.

In the more rapidly growing portions, the cells lost their definite alignment in cords and appeared as large polyhedral masses of cytoplasm containing one or several dark nuclei, and were loosely arranged in a network of capillaries. (Fig. 2.) At intervals there occurred cells of unusual size containing single gigantic nuclei of irregular contour or clusters of dark nuclei. Many cells assumed bizarre shapes many times the usual size of a normal chromaffin cell. (Fig. 3.) The nuclei showed a diversity of forms, of huge size, with irregular lobulated outline, occurring singly or closely arranged in groups within the cells. The chromatin was heavy but occasionally a reticulum could be distinguished. At times there occurred spherical hyaline bodies which failed to stain within the nucleus, and which stood out sharply defined from the chromatin material. Pyknotic nuclei were numerous. Mitotic figures occurred only occasionally and the closely placed nuclei in the multinucleated cells suggested that division had been by amitosis.

The cytoplasm was finely granular. Often it contained vacuoles which, when numerous and small, gave a foamy appearance to the cells. Many cells, especially the larger ones, contained inclusions appearing as one or more spherical droplets, of a homogeneous eosinophilic hyaline material, sharply defined from the surrounding granular cytoplasm. Some of this hyaline material occurred extracellularly as droplets. No pigment caused by the chrome reaction was seen in the cells, but the time of fixation after death was too long an interval to make this possible.

The vascularity of the tumor and the absence of stroma were conspicuous features. Dilated capillary channels often occupied as much space as the tumor cells and completely surrounded the chromaffin cell cords, acting as supporting structures for the epithelial cells. These blood vessels in no way gave the appearance of a capillary hemangioma, but merely represented the close connection between chromaffin cells and the blood stream that exists in the normal medulla.

The cortex was greatly narrowed and compressed by the growth of medullary cells. At many points it had been actually invaded by the tumor cells which streamed outward to the capsule. However, in spite of the undifferentiated character of the cells, no point was found where the cells had actually penetrated through the capsule.

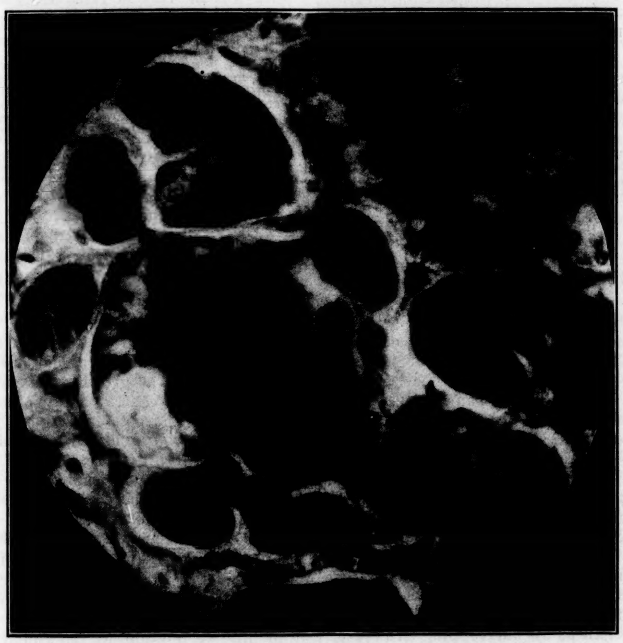


FIG. 3. High power photomicrograph (600×) showing large multinucleated tumor cells with vacuolated cytoplasm.

The opposite adrenal was of usual size and showed no important microscopic change.

DISCUSSION

This tumor appeared to be a simple tumor of chromaffin cells with no other elements of the adrenal medulla entering into the tumor process, thus differing from several of those previously reported, as those by Hedinger, Manasse, Marchetti, and Suzuki, in which sympathetic cells participated in the process. The cells were of a quite rapidly growing type, as indicated by their lack of differentiation, irregularity in arrangement, formation of giant bizarre forms and penetration of the cortex. In the character of the cells it resembled the tumors reported by Hedinger, Herde, Kawashima, Suzuki, Thomas, and Wegelin. But, like all the other reported tumors it was benign, with no invasion of structures outside of the adrenal nor production of metastases. The cells, however, had all but penetrated the capsule and their atypical character raises the question whether such a tumor might not become malignant. The association of the tumor with neurofibromatosis is of interest, in view of the fact that cases reported by Herxheimer, Kawashima, and Suzuki showed a similar association of conditions.

BIBLIOGRAPHY

1 Alezais et Peyron: Un Group nouveau de Tumeurs epithéliales: les Paragangliomes. C. r. de la Soc. de Biol., 1908, 65, 745.

2 Berdez: Contribution à l'Étude des Tumeurs des Capsules surrénales. Arch. de méd. Exp. et d'Anat. path., 1892, 4, 412.

3 Manasse, P.: Ueber die hyperplastischen Tumoren der Nebennieren. Virchow's Archiv., 1896, 133, 391.

4 Wiesel, in discussion of Stangl: Zur Pathologie der Nebenorgane des Sympatheticus. Wiener klin. Wchnschr., 1902, 15, 614.

5 Marchetti, G.: Beitrag zur Kenntnis der pathologischen Anatomie der Nebennieren. Virchow's Archiv., 1904, 177, 227.

6 Alezais et Peyron: Le Paragangliome surrénal. Bull. de l'Assoc. francaise pour l'Étude du Cancer, 1911, 4, 255.

7 Laignel-Lavastin and Aubertin: Adénome médullaire de la Capsule surrénale. Arch. de Méd. exper. et d'Anat. path., 1908, 20, 818.

8 Suzuki, S.: Ueber zwei Tumoren aus Nebennierenmarkgewebe. Berl. klin. Wchnschr., 1910, 47 (2), 1635.

9 Hedinger, E.: Struma medullaris cystica suprarenalis. Frankfurter Zeitschr. f. Path., 1911, 7, 112.

10 Kawashima: Ueber einen Fall von multiplen Hautfibromen mit Nebennierengeschwulst. Virchow's Archiv., 1911, 203, 66.

11 Wegelin: Ueber einen chromaffinen Tumor der Nebenniere. Verhandl. d. patholog. Gesell., 1912, 255.

12 Herde, M.. Zur Lehre der Paragangliome der Nebenniere. Arch. f. klin. Chir., 1912, 177, 937.

13 Herxheimer, G.: Ueber Tumoren des Nebennierenmarkes, insbesondere das Neuroblastoma sympatheticum. Ziegler's Beitr., 1913, 57, 112.

14 Thomas, E.: Ein chromaffinen Tumor der Nebenniere, eine weiteren Beitrag zu den Markgeschwülsten der Nebennieren. Frankf. Zeitschr. f. Path., 1915, 16, 376.

15 Wahl, H. R.: Neuroblastomata: With a Study of a Case illustrating the three types that arise from the Sympathetic Nervous System. Jour. Med. Research, 1914, 25, 205.

16 Harbitz, F.: Tumors of the Sympathetic Nervous System and the Medulla of the Adrenal Glands, especially malignant Neuroblastoma. Arch. Int. Med., 1915, 16, 312.

17 Ewing, J.: Neoplastic Diseases, 2nd edition, 1922, W. B. Saunders.

INFECTIOUS GRANULOMATA FROM ABSCESSED TEETH[*]

BY ERNEST M. DALAND, M.D., BOSTON

Apical abscesses of long standing occasionally break through to the surface of the skin and produce lesions which may be confused with cancer. The lesion shows an inflammatory induration, a central ulceration and has a tendency to become crusted over. The discharge from the central uleration may be so slight that it is not noticed. The lesion may be so far distant from the teeth that the possibility of its relation to the teeth is not considered. However, such lesions do not respond to the usual dosage of radiation,—a point to be kept in mind in the diagnosis of doubtful cases.

Case I. Mrs. B. Z., 26, was seen at my office on February 24, 1925, for a growth on her face. This began as an outcropping growth on the skin over the left lower jaw. Its duration was six months. She had had three X-ray treatments. Radium had been advised but not given. Examination showed a raised growth in the skin over the left lower jaw midway between the symphysis and the angle. It was nearly 2 cm. high and had a circular base which was .5 cm. in diameter. The distal half of the growth felt distinctly horny while the base was firm and indurated. The tumor was freely movable superficially, but there was a central area of attachment. No glands were palpable and there was no thickening or tenderness in the mouth. A diagnosis of skin cancer was made but the patient was told that the central fixation was unusual and could not be explained. A local excision was advised, although it was realized that it might not be possible to remove the central adherent area. Without more information a radical operation was not indicated. The growth was excised under novocaine. The central area appeared like a duct and was cut across as near the jaw as possible and the wound closed with silk. When examined grossly it was seen that the tumor was not cancer. It appeared more like an accessory nipple. There was a central duct which could be probed for 2 cm. The "indurated" base felt porky but not hard.

Pathological examination by Drs. J. H. Wright and W. L. McNamara showed a benign papillomatous growth in suppurative inflammation. The duct was lined with epithelium but its relation to the tumor could not be explained.

The wound healed by first intention. The patient returned on March 11 with a recurrence about one half the size of the original growth, but it was evident that there was pus present. As the wound was opened and the pus drained, the tumor flattened out. X-rays were taken of the jaw for a focus for the pus. Abscesses of the left lower first bicuspid and third molar were found. She had a bridge connecting these two teeth. She was referred to her dentist for extraction of these teeth. The bridge was removed and three teeth extracted. The sinus to the face healed quickly and has remained healed.

More emphasis might have been placed on the central area of fixation and X-rays taken before the excision was done. Skin cancer in a woman of 26 is unusual but not unheard of.

[*] From the Collis P. Huntington Hospital.

CASE II. Miss A. M., Huntington Hospital No. 24.1410, age 41, entered with a growth at the right naso-labial fold. Its duration was ten months. This had been opened twice by her family physician. He then referred her to a dermatologist who gave her six radium treatments, presumably with a radium placque. The latter referred her to the Huntington Hospital and suggested that a radium needle be inserted in the center. He described the lesion as "a cutaneous horn with soft horny tissue extending down for three-fourths inch."

The appearance of the lesion changed considerably in the next two days. At her entrance to the hospital the following note was made: "On the right naso-labial fold is an area of erythema 3 x 2 cm. in size. In the center is an elevated, crusted lesion .5 cm. in diameter. On removal of the crust the lesion appears cystic and fluctuant." It was decided to wait two weeks for the erythema to subside. At the end of that time excision was advised and done (Nov. 29, 1924) under local anaesthesia. The wound was closed with silk stitches. One week later the stitches were removed and the note was made that there was "induration around the incision as though it had been infected."

The pathological report was "a small cyst lined with epithelium, secondarily infected. No malignancy." Dr. W. L. McNamara.

On January 9, 1925, the wound had again opened. At this time a probe was passed to bare bone. X-rays of the antrum were negative. One week later, as the sinus had not healed, it was noted that an abscessed tooth might be the cause. X-rays taken with the probe in the sinus showed that it entered the antrum. The right antrum was hazy. Films of the teeth showed apical pathology in the right upper lateral incisor, cuspid and second bicuspid teeth. Accordingly, an operation was advised and performed March 24 by Dr. D. C. Greene. An incision was made over the right canine prominence. The periosteum was elevated from the alveolar process and the anterior surface of the superior maxilla. As the periosteum was elevated from the upper part, the fistulous tract was seen to extend into the bone at the apex of the root cavity. The canine tooth was extracted and the anterior wall of the root cavity removed. The cavity and fistulous tracts were curetted out and considerable granulomatous material saved for examination. Microscopically, this showed no malignancy.

April 15, 1925. The original sinus was entirely healed.

If this lesion had been probed at the time of the original excision it is probable that bare bone would have been felt and a correct diagnosis made.

CASE III. C. E., Huntington Hospital No. 21.446, age 48. Four months before entrance on April 29, 1921, a "pimple appeared on cheek." This became infected and he went to the Boston City Hospital. Radium and later carbon dioxide snow were applied. He was then referred to the Huntington Hospital. The note on admission was, "on the right side of the cheek near the ala of the nose is a reddened area 1 cm. in diameter. There is slight redness about this, representing the reaction from the last radium treatment."

Three weeks later he was given radium for what was taken to be a skin cancer. After a second treatment the induration was absent and a tiny sinus was noted. A month later the lesion appeared cystic and a diagnosis of sebaceous cyst was made.

On October 1, 1921, a local excision was done. The pathological report made by Dr. J. Homer Wright was "suppurative inflammation. No cancer." The wound healed quickly but in three weeks the cyst reappeared. On October 25, 1921, another excision was done and Dr. Wright reported "carcinoma with small cells."

Within a month the lesion reappeared as a nodular growth. This was destroyed by a radium seed inserted into it. After this there was a constant discharge from the wound. Radium was given about every two months for a year.

On August 24, 1923, the following note was made: "Lesion now 4 mm. in diameter, somewhat soft, with undoubted induration along lower margin, probably malignant." The following day a local excision was done and the wound left to granulate. It entirely healed for a time. The pathological report showed chronic inflammatory tissue.

The patient appeared next on February 8, 1924, with a recurrence. The lesion was curetted. Two blood Wassermanns were negative. Nothing but expectant treatment was given.

On February 20, 1925, a definite sinus was again noted and was probed. This extended to bare bone. Examination of the mouth showed several old tooth roots and one decayed tooth. Extraction was advised and done by his dentist. Following the extraction the wound healed and has remained healed.

The various specimens have been looked up in this case. The second one was undoubtedly cancer. It seems probable that there was never a recurrence of this cancer, but that an opening was made from the operative wound into the tooth abscess at the time of operation. As there were numerous specimens removed which showed no cancer, the lesion was probably an infectious granuloma from that time on.

CASE IV. Mrs. E. D., Huntington Hospital No. 24.1180, age 36. She first came to the hospital on September 19, 1924, with a growth on her chin. Local examination showed "on the right side of the chin a small, raised, smooth, tender, reddish tumor 8 x 3 cm." A diagnosis of septic wen was made.

On September 22, this was excised under local anaesthesia. Dr. Wright reported "Microscopical examination shows a suppurative process. No evidence of malignancy." The wound healed in one week.

On March 31 she returned with a lesion 3 mm. in diameter similar to the original lesion. This was excised and she was directed to consult her dentist for possible pathology in the teeth. He found abscessed roots and extracted her remaining lower teeth. The lesion on the chin immediately healed and has remained healed.

SUMMARY. Four cases of infectious granulomata are reported. Three are of interest because they were considered cases of skin cancer and were accepted as such by a number of physicians, both in our clinic and outside of it. They had certain features in common, and might have been correctly diagnosed earlier. The third case at one time did have a basal cell carcinoma, but this was removed surgically and what was taken for recurrence was probably an infectious granuloma. All four infections were connected with abscessed teeth and were cured by extraction of the teeth.

TYPHUS FEVER—REPORT OF A CASE*

BY WILLIAM DAMESHEK, M. D., BOSTON

TYPHUS FEVER, in endemic form, is sufficiently rare in this country to warrant the report of a case.

REPORT OF CASE

S. K., single, a Jewish druggist of 29 years, was admitted to the Boston City Hospital on March 17, 1925, the fourth day of his illness, complaining of intense headache. He was born in Russia, and came with his parents to this country in 1906. Since that time, he had always lived and worked in the vicinity of Boston, and had never left the state. His parents, with whom he lived, had taken an extended trip to South Africa and England during most of 1923 and 1924, and had returned to Boston in the last week of January, 1925. During the first half of February, they stayed with a daughter, but about the 20th of that month, they removed to an apartment in Roxbury, where, for the first time, they unpacked the clothes used in their months of travelling. The patient lived with his parents for one day, their first in the apartment, but on the second day he fractured his left tibia. He then left to stay with a sister in Lynn, Mass., where he remained for 3 weeks. On March 2, 1925, he returned to his parents' home, where he lived until brought to the hospital. At no time, either in Boston, Lynn, Roxbury, or Cambridge, did he remember coming in contact with recent arrivals from Europe, except, of course, his parents.

The patient felt perfectly well until March 14, when he began to complain of headache, anorexia, and some malaise, which symptoms became aggravated during the following day; on this day, the 15th, he felt feverish. The next day, his headache became extremely intense and "bursting" in type. He felt exhausted. His temperature was 101.5° F. During the 17th, his headache continued intense; he felt worse; became drowsy; and vomited twice during the day. His temperature rose to 102.5°, and then to 103°. His drowsiness and general malaise rapidly increasing, he was removed to the Boston City Hospital late in the evening of the 17th, the fourth day of his illness.

Except for slight constipation, he had no other symptoms such as chill, diplopia, stiff neck, cough, chest pain, muscular pain, abdominal pain, or diarrhoea. He complained bitterly of splitting, agonizing headache, which he declared unbearable.

Physical examination on admission showed a man of 29, lying flat on his back, acutely ill. He was very fretful and had an anxious expression about his face, which showed lines of intense pain. His sensorium was somewhat dulled.

Scalp was clean. The eyes showed no conjunctivitis, strabismus, nystagmus, diplopia, ptosis, etc.; the fundi were negative. Ears, nose, throat were entirely negative, and his neck was not rigid. Heart and lungs were normal. His abdomen was slightly distended with gas, but showed neither rose-spots nor spleen. Extremities showed nothing; the reflexes were all normal, and the skin entirely clear. In short, except for the general aspect of acute illness with pain, the examination was entirely negative.

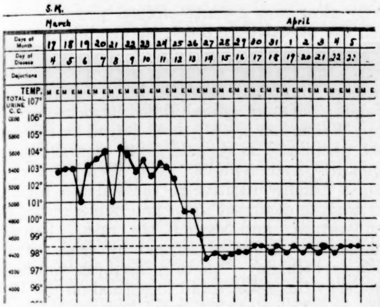
Temperature on admission was 103°; pulse 120; respiration 30. White count was 12,000; differential count showed 80% polymorphonuclears, 16% lymphocytes, 4% large mononuclears. In view of the headache, negative P. E., and temperature, the tentative diagnosis *of influenza* was made, although *typhoid fever* was considered a possibility.

PROGRESS

March 18, 5th day. Patient's temperature fluctuated between 100.5° and 103°. His headache persisted as intensely as ever, being apparently unaffected by the antipyrin or salicylic acid groups, or by codeine. He became increasingly dopey and soon presented the typical facies of typhoid. P. E. continued negative except for slight uniform injection of the faucial ring, and a thickly coated tongue. Urine was entirely negative. White count was 10,000, the differential count remaining as above. On this day the diagnosis of *typhoid fever* seemed the most probable, and the routine treatment for typhoid was started. He had good results from enemata, the stool being normal.

---

*From the First Medical Service, Boston City Hospital.



March 19, 6th day. The temperature seemed on the upward trend, fluctuating between 101° and 103.5°, the pulse averaging 115. Headache still persisted as intensely as ever, and though there were no signs of meningeal irritation, the possibility of *meningitis* or *encephalitis* was considered. Lumbar puncture was accordingly done, the fluid, which was clear and colorless, being removed under slightly increased pressure. Cytological and chemical examinations were negative except for a rather high sugar content—0.084 g. per 100 cc.

On the evening of this day, an eruption was noted on the abdomen, chest, arms, axillae, and upper thighs. It was made up of large, pink macules, in shape oval, their largest diameter being parallel to the transverse diameter of the body. The macules faded slightly on pressure, leaving a brownish stain; they were not at all raised and did not itch. The rash resembled *measles* very strongly except that the face was not involved and Koplik spots absent. It also looked very much like the eruption of *secondary syphilis;* but there was no glandular enlargement and no history or other sign of syphilis. The rest of the P. E. continued negative, except for slight injection of the faucial ring.

March 20, 7th day. Temperature varied hardly at all today, it being continuously at 104°. Headache had lessened, but the patient was frequently delirious and extremely drowsy. He complained at times of inability to void, but at other times urinated large quantities in bed; he became, too, incontinent of feces. His rash became more marked and was very blotchy on the arms and thighs. Laboratory data were all negative; white count 10,000; differential count as above; blood culture—no growth; blood and spinal fluid Wassermann negative; stool culture (Endo medium) negative. At this juncture I thought of the possibility of *typhus fever,* and the published accounts of the disease agreed closely in every detail with this case. Headache for six days, gradually rising fever, rash on the sixth day, mental symptoms, urinary disturbances, negative laboratory data—all were typical.

March 21, 8th day. Patient continued drowsy, at times delirious, and incontinent of feces and urine. Temperature fluctuated between 101° and 104.2°. P. E. continued negative except for the rash, which was beginning to fade from the arms, the thighs, and the chest.

March 22, 9th day. Temperature between 102.5° and 104°. Patient still continued in a typhoidal state. Most of the rash had by this time faded, leaving on the lower abdomen (also slightly on the flanks and lower back) about twenty small magenta or Burgundy-wine colored macules. These were round, about 4 mm. in diameter, level with the skin, and did not not press out. They were much darker than the rose-spots of typhoid, not felt on rubbing the hand over the skin, and definitely hemorrhagic in origin. Dr. Palfrey, who with Dr. S. B. Wolbach headed the Typhus Research Commission of the League of Red Cross Societies to Poland was asked to see the case, and he confirmed the diagnosis of *typhus fever.* He found no lice, but suggested a kerosene bath for the patient, disinfection of his clothes and those of his family. He said the case was a typical one of typhus and gave a good prognosis, since it was evidently mild.

Interest now centered about the question as to where the patient could have contracted the disease, with the result that the facts cited at the beginning of this report were unearthed. All possible sources except the parents were apparently eliminated, and it was thought they must have brought some lice back with them in their clothes. They first unpacked on Feb. 20, 22 days before the patient became ill; and the latter lived with them about that time, also from March 2 to onset of his disease.

March 23 and 24, 10th and 11th days. Patient still very dull, and at times incontinent. Temperature between 102° and 104°. P. E. still negative except for wine-red macules described above; the rest of the rash had by this time faded. White count 10,000; second blood culture—no growth;Widal negative for typhoid, above; the rest of the rash had by this time ture—no growth; Widal negative for typhoid, paratyphoid A and B.

March 25, 12th day. Patient was less dull in the afternoon and no longer incontinent. Tempertature, which was 102° in the morning, dropped to 99.8° in the evening. Rash still present.

March 26, 13th day. Patient felt much better today, and gradually improved during the day. For the first time, he appeared bright, and smiled. His temperature, which had risen somewhat, went from 101° to 99°. The rash was still present.

March 27, 14th day. Patient today was completely and entirely better. His temperature was subnormal and remained so during the entire day. He felt fine, developed an enormous appetite, and was his normal self. The *Weil-Felix reaction*—an agglutinabion reaction with Bacillus Proteus X-19—was negative as reported by both the Pathological Laboratory and the Boston Board of Health (the same culture was used).

Convalescence was uneventful. There was no further temperature rise; the few macules gradually faded, leaving a brownish discoloration of the skin. The patient was discharged completely relieved on April 5th, nineteen days after admission.

RÉSUMÉ

This case illustrates a typical one of typhus fever in the endemic form, known sometimes as Brill's Disease, and described so well by Brill in the Nelson System of Medicine, Vol. 1, p. 191. It is interesting chiefly from a diagnostic standpoint.

In all probability (since all other sources were ruled out), the patient contracted the disease from lice carried over by his parents from Europe. This would make the incubation period anywhere from one day to a month. Intense headache; gradually rising temperature to 104° on the 7th day with pulse of 120; appearance of a rash on the 6th day with alleviation of headache; character of the rash, at first like a fading measles or a secondary syphilitic eruption, giving way to about 20 hemorrhagic, magenta-colored macules; delirium, stupor, and prostration; incontinence of urine with bladder distension; complete relief from all symptoms on the 13th and 14th days, when the temperature rapidly fell to normal—all these make up a perfectly clear and definite clinical picture. And then the negative findings: no meningeal signs; no spleen or rose-spots; white count of 10,000 with a differential count of 80% polymorphonuclears; repeated negative blood-cultures and Widals; negative spinal fluid; negative spinal fluid Wassermann,—all these helped to rule out such pssibilities as typhoid fever, meningitis, encephalitis, and syphilis. The Weil-Felix reaction is usually negative in the endemic form.

I wish to comment upon two points: first, the temperature; and second, the rash. Usually, temperature drops to normal by crisis on the 13th or 14th day. In this case, (as sometimes happens) there was a fall to normal on the 12th, 13th and 14th days by rapid lysis, as shown in the appended temperature chart. The rash in the endemic form is usually measly in type and but rarely hemorrhagic. In this case, definite hemorrhagic macules appeared following the subsidence of the generalized macular rash.

I am indebted to Dr. Albert A. Hornor, Junior Visiting Physician to the First Medical Service, Boston City Hospital, for permission to report this case.

MEDICAL PROGRESS

RECENT PROGRESS IN PROCTOLOGY

BY T. CHITTENDEN HILL, M.D., F.A.C.S., BOSTON

MALIGNANT DISEASE

A résumé of the literature on proctology for the past year or year and a half reveals that attention, in this country and on the continent, has been focused very largely on malignant disease of the rectum. On the ninety-six articles reviewed, thirty-one were on this subject. Discussion is still rife as to the comparative merits of surgical and radium treatment, or of surgery and radium or Roentgen rays combined. Furthermore those surgeons who give preference to operative procedure are not in accord as to the choice of operation.

Coffey, in a scholarly and beautifully illustrated article, favors an abdomino-perineal operation preceded by colostomy, in two stages, and Lecène of France an adominal operation alone, or an abdomino-perineal mode of approach. Lecène says that he does not believe a cancer can be "cured" in the true sense of the word—that is, so that there will be no recurrence over as long a period as 25 or 30 years, but he does cite four cases where a malignant epithelial tumor had not recurred over a period of 8 to 10 years. He calls to mind the truth that with a tumor of slow growth a patient may do well for 2½ or 3 years with only a left iliac anus and lavage, and that the only criterion of the results of any operation is a period of at least 5 or 10 years. This French author places little value on radium or X-ray treatment, saying that in his experience it has not arrested the progress of the disease.

Another French writer, Duroselle, advocates a single route of approach—a perineal operation for low-lying growths and an iliac anus and abdominal excision of higher growths—as giving a much lower rate of mortality. In his opinion, while technically the abdomino-perineal operation may give the most perfect results, this advantage is counterbalanced by the number of post-operative deaths, which is very high in the combined operation.

A colostomy followed by the application of X-rays is favored by May, who gives figures showing five out of twenty-two inoperable cases made operable in this way. "Even with liver metastases," he says, "radiation often gives the cachetic patient, through the temporary inactivity of the growth, a new lease on life."

Lory and Bruneau de Laborie (*J. de radiol. et d'électrol.*, Vol. VII, 1923) and Nogier (*Lyon méd.*, Vol., CXXXII, 1923) each give their methods of applying radium to the malignant growth. The former accomplishes this by inserting a catheter of smaller lumen and so gummed as to be held firmly in place, within the catheter holding the tube of radium. Previous rectoscopy has enabled the operator to discover the length of the stenosis caused by the growth and from this he estimates the number of tubes of radium necessary to reach its whole extent. Externally the rigid, gummed catheter is held in place by a rod of copper, 15 cm. long, curved to fit the contours of the buttocks and turned up in the shape of a circle on both ends so as not to wound the patient. This rod is put through the end of the catheter and strapped down with bands of adhesive. In this manner the radium-carrying tube is immobilized and not displaced by involuntary defecation.

Nogier uses a catheter tipped with India rubber, at the radium-carrying extremity of which is a loop of silk thread, into which the index finger is inserted. Thus the finger guides the catheter into the strictured passage without danger of making a false step or causing peritonitis. He cites the case of a woman 64 with a large tumor on the right wall of the rectum and invading the recto-vaginal wall, who was given radium treatment, first to both the rectum and vagina and then to the vagina alone, and who has had no recurrence for eight years. A second case of a tumor of the neck of the uterus was successfully treated by radium, the period of freedom from recurrence in this case also being eight years.

Kelly and Ward assert that "radium used alone or with some operative procedure is par excellence our most valuable therapeutic agent in the treatment of cancer of the rectum in all stages." In support of this contention they give statistics of 200 cases, which came to them in all stages, and out of which 22 cases were in these 22 cases were cured. The length of period of non-recurrence in these 22 cases ranges from 1 year to 10 years, 13 of them being well after 5 years. In addition to the actual cures, 62.5% of their patients received relief from one or more of their symptoms and were made more comfortable. Operations plus radium cured 17.2% of the cases in which these combined methods were used; radium alone cured 8.4% of the cases in which it was employed without other means; and where colostomy plus radiation was used, the percentage of cures was 6.4%. In the Kelly Hospital three methods of radium therapy are employed: (1) implantation of bare emanation needle points into the diseased area, (2) direct application of the emanation to the diseased area, (3) external, or so-called deep radiation with massive doses at a distance and fired into the diseased area from several directions. Kelly and Ward do not feel that the first-named method has had sufficient trial to enable them to speak positively of its merits, and until it has, they believe that a combination of external and internal applications gives the highest percentage of palliation.

HEMORRHOIDS

In the literature on hemorrhoids, we find Waring an exponent of the electro-coagulation method. He makes the point that because this has been used by quacks and charlatans, it should not, simply on that account, be rejected without a fair trial: that it should be investigated and if found an improvement on other methods, employed. After preliminary novocain anesthesia of the hemorrhoidal area, the internal hemorrhoids are brought down by a glass suction cup and each pile taken up separately by a suction tube. The indifferent electrode (a plate of diathermal metal) is strapped over leg, shoulder, or abdomen, and just sufficient electric current applied directly to the pile area to coagulate but not carbonize or burn the hemorrhoidal tissue. In this manner the blood and lymphatic supply to the pile mass is destroyed and in a few days this sloughs away.

The injection of different chemicals—carbolic acid, quinine and urea, iron perchloride, ergot, lead acetate, alcohol and formalin—has been experimented with by Anderson and Dukes. They are convinced that carbolic acid gives the best results, although quinine and urea is almost as effective. They use 10% carbolic acid in equal parts glycerin and distilled water. Pathological examination showed that the carbolic acid sets up an aseptic inflammation with dilatation of the vessels, emigration of leucocytes, and transudation of lymph. By these means the alien liquid is diluted and removed and thereafter the inflammation quickly subsides.

Wilson (*British Med. Journ.* 2:237, Aug. 9, 1924), while not claiming that all hemorrhoids can be cured in this way, advises a reëducation of the anal sphincter in those instances where the piles are produced by a loss of tonic contraction of this muscle, causing the blood in the hemorrhoidal plexus of veins to find its way through the capillaries of the mucous membrane of the anal orifice into the external (subcutaneous) veins of the anus. This "reëducation" is brought about by the patient voluntarily contracting the sphincter and levator many times a day for a few days or weeks. Thus the tonic activity is increased and the hemorroidal tendency obliterated.

The clamp and cautery method of operative procedure is supported by Syms. He has had but one mortality out of 600 cases. In 64 of these sacral anesthesia was employed and was successful in 61. The details of his method of operating are given in a four-paged article in Surgery, Gynecology and Obstetrics for September 1924.

FISTULA

Two methods of excising anal, ano-rectal, and rectal fistulas are described by Pennington. By his first method, methylene blue is injected to outline the fistulous tract, if necessary; a blunt-pointed director is passed through the fistula; the pyogenic membrane dissected and removed; the incision in the mucosa closed with a continuous catgut suture; the severed sphincter and deeper tissues united with interrupted buried sutures of catgut, and the skin and fascia closed with silkworm gut.

In his second operation, the fistulous tracts external to the sphincter are divided; a director passed into the bowel through the remaining tract and incision made on the distal side; part of the fibres of the external sphincter are divided, the knife turned and the "back cut" of Salmon made along the proximal side of the tract; a seton is passed through the opening into the bowel and tied loosely around all the tissues remaining undivided. A week or ten days later, under local anesthesia, the incision is carried as far distally as possible so that it will pass through distally to the fibres of the external sphincter when the skin is divided and the healing process complete.

Martin (*J. d'urol. med. & chir.*, 1923, Vol. XVI) gives a detailed account of a case in which a vesico-rectal fistula, in a man with an enlarged prostate, closed upon treatment of the prostatic condition. A fixed catheter was inserted and the bladder irrigated with silver nitrate. This prevention of the urine's passing into the rectum resulted in closure of the fistula within eight days. Lavage was kept up for fifteen days, however, after which a prostatectomy was done. The author says that while fistulae of traumatic origin or secondary to cancer, stricture, or diverticula are fairly common, he has only seen one case comparable to his, in which an hypertrophied prostate which penetrated into the rectum was responsible for the persistence of the fistula.

STRICTURE

The English writer, Symonds, cites three cases of stricture of the rectum, the first with a definite history of syphilis; in the second, syphilis not proved; the third definitely showing no evidence of syphilis. He calls attention to the prevalence of this condition in women and says that whether it is due to a pure gonococcal infection or to a mixed infection, constitutional syphilis cannot be set down as the cause. "It is more probably due," he says, "to local infection from labial and vaginal discharges and as the most frequent cause of these is gonorrhea, call it "gonorrheal stricture."

Congenital rectal stricture is added by David (*Surgery, Gynecology and Obstetrics,* 1923, Vol. XXXVII) to the causes usually ascribed to infantile megacolon. Various writers have described this disease as due to congenital giantism of the colon (Hirschprung), or as being an acquired condition brought about through (1) congenital increase in the length of the colon by reason of excessive loop formation, (2) rectal valve hypertrophy, (3) spasm of the sphincters or bowel muscles. To this latter classification David adds congenital rectal stricture and cites three instances in which when the stricture was removed by operation, the megacolon disappeared. He believes that rectal examination in infantile megacolon will bring to light etiological factors of importance in some of these cases.

PROLAPSE

The two articles that we have run across in the recent literature on this subject (*Yoemans, Trans. Am. Proctol. Soc.* 1923-1924 and *Lynch*) *Journ. A. M. A.*, 1924) seem to agree that rectal prolapse is brought about by congenital or acquired mobility of the rectum due to relaxation of its supports from one or another predisposing cause. Lynch adds that a long sigmoid is also undoubtedly responsible since one never saw a prolapse of the rectum without there being present an unusually long sigmoid. This writer's operation is based on the fact that the lateral ligaments are the chief support of the rectum. He says that from an anatomical viewpoint the ideal operation for correction of prolapse would be resection of the sigmoid and shortening of the lateral ligaments, but up to the time when he reported his method (June 14, 1924) he had not combined these two steps. In two women, however, who had long-standing prolapse and had undergone many operations, he shortened the lateral ligaments with such sucess that the rectum was not only restored to place, but the sphincteric tone was regained so that the patients acquired complete control, so complete, in fact, that they were able to retain an enema.

Yoemans enumerates the following factors as predisposing to relaxation of the rectal supports; congenitally weak fixation of the bowel; chronic debilitating diseases; spinal cord disease; a solitary polyp of rectum or lower sigmoid acting as a foreign body; organic stricture of the bowel; and in women, neglected perineal lacerations and hysterectomy with poor repair of the pelvic diaphragm. He cites three cases in which Mikulicz' operation of circular amputation was successfully performed.

PRURITUS

Montague has made a study of the pathology of pruritus ani, vulvae and scroti. He finds that in pruritus of transient type often no pathological changes in the tissues are found, but that pathological changes may be found later due to infection induced by scratching. He divides the types of cases into three groups, according to the amount of involvement. In the first group are found extensive hyperkeratosis, tremendous hyperplasia of the stratum mucosum, great downgrowth of the interpapillary processes, marked sclerosis of the fibrous connective tissue element of the corium and a tendency toward hyalinization of the epidermal cells—a chronic productive dermatits of traumatic origin. In the second stage there is seen marked pigmentation of the epidermal layers; dilatation of the lymph spaces; diffuse cellular infiltration of the corium which is particularly intense sub-epithelially; some vascular dilatation and general edema of the tissues with beginning hyperplasis of the stratum mucosum. This is a subacute exudative dermatitis of probably infective origin and is often found superimposed on the first condition. Thirdly, where the disease has existed for as long as fifteen or twenty years, there is kraurosis and extensive atrophy of the entire skin in the area affected.

VENEREAL DISEASE

Cohn, a German writer, cites a case of gonorrhea of the rectum from perforation of a gonorrheal abscess, which, he says, is infrequently found. The man came to him with a history of gonorrhea and with gonococci demonstrable in the urine; the prostate was enlarged and painful. A month and a half later he returned complaining of sudden pain in the rectum and rectoscopy showed marked hyperemia of the mucous membrane and an ulcer the size of a millet seed 5 cm. above the anal ring on the left anterior wall of the rectum (the point of perforation).

A case of perforation of the rectum in tabes is reported by Pagniez and Coste (*Bull. et mém. Soc. méd. de hôp. de Par.,* Nov. 1923). A man 74 years of age came to them with profuse diarrhoea and partial incontinence. He died suddenly a month later, following erysipelas of the face. Autopsy showed the peritoneum filled with fetid fluid without any tendency to localized peritonitis. There was perforation of the rectum about 20 cm. from the end but no marked peritoneal reaction around the perforation and no signs of marked thickening or inflammation. There were, however, numerous intestinal diverticula of the sigmoid. The author questions whether it was a diverticulitis followed by gangrene, as the absence of inflammatory reaction would be against this. The more likely explanation seems to be that it was a perforation of infectious origin, having evolved with little reaction and as a complication of the erysipelas.

NON-MALIGNANT GROWTHS

In the *Munch. Med. Wochenschr.* for February, 1924, Volger gives the details of an instance in which a rectal fibro-lipoma was cured spontaneously by torsion of the stem. The author says that while it is not unusual for rectal polyps to disappear of themselves, this happens more infrequently with polyps high up in the region of the sigmoid. In the case reported the tumor was 19 cm. from the anus, so filled the rectum that the rectoscope could not be passed beyond it, was very painful and seemingly immovable. A diagnosis of polyp with torsion of the stem was made and the patient advised to have the growth removed immediately. Four days later she returned saying that suddenly with a great deal of pain and tenesmus the tumor had come away. It was larger than one's first, of necrotic appearance, with a conical-shaped end showing the remains of the stem. Microscopic examination proved it to be a fibro-lipoma.

In a short article in the Lancet, Dolbey and Fahmy discuss four types of rectal bilharziasis found in Egypt, characterized by the formation of numerous papillomata of varying size. The only successful treatment of the condition is the removal of the whole tube of mucous membrane of the rectum.

SPINAL CORD TUMORS

We are reminded to take into consideration the possibility of spinal cord tumors when bladder and rectal disturbances are present by an article by Stookey in the Archives of Neurology and Psychiatry. In a series of spinal cord tumors, bladder and rectal incontinence were found to occur comparatively early in endotheliomas and sarcomas and late in fibromas and neurofibromas. The reason for the early disturbance in small endotheliomas may be the fact that they were often extremely hard; with sarcomas, on the other hand. these, though soft, early attained a large size. Rectal incontinence occurred twice as frequently in extramedullary tumors as in those of the conus and cauda and four times as often as in intramedullary or evtradural. Bladder and rectal incontinence came earliest in conus and cauda tumors, next earliest in extramedullary growths, and extremely late with intramedullary and extradural. Of tumors of the same segmental level, some gave rise to sphincteric disturbances and others did not. The indications were that no particular segment either of the afferent or the efferent arc is particularly concerned with sphincteric control. Obstinate constipation was rather common in all cases. Usually the bladder and rectal disturbances are the first to return after removal of the spinal cord neoplasm.

BIBLIOGRAPHY

Coffey, R. C.: Principles of operation for carcinoma of rectum. Surg., Gynec. and Obst., XXXVIII, p. 723, June, 1924.

Lecene, P.: Remarque sur le traitement chirurgical du cancer du rectum. Paris med., LI, p. 155, 1924.

Duroselle: Treatment for cancer of rectum. Jour. de Chir., XXIII, p. 249, Mar., 1924.

May, E. A.: Surgical and Roentgen treatment of carcinoma of the rectum. Am. Jour. Roentgenol., N. S. XI, p. 246, 1924.

Lory and Bruneau de Laborie: Technique précise d'applications de radium dans les neoplasmes du rectum bas situés. Jour. de radiol. et d'electrol., VII, p. 493, 1923.

Nogier, T.: Procédé pour mettre en place rapidement le radium dans les neoplasmes du rectum. Lyon med., 1923, CXXXII, 693.

Kelly, H. A., and Ward, G. E.: A clinical study of radium therapy in carcinoma of the rectum. Surg., Gynec. and Obst., XXXVII, p. 626, 1923.

Waring, J. B. H.: Electro-coagulation methods in treatment of hemorrhoids; simple, bloodless, ambulant technique. Va. M. Monthly, LI, p. 235, July, 1924.

Anderson, H. G., and Dukes, C.: Treatment of hemorrhoids by submucous injections of chemicals, with a description of the pathological change produced. Brit. Med. Jour., II, p. 100, July 19, 1924.

Wilson, T. A.: Cure of piles by re-education of anal sphincter. Brit. Med. Jour., II, p. 237, Aug. 9, 1924.

Syms, P.: Radical cure of hemorrhoids by clamp and cautery method, emphasizes value of sacral anesthesia. Study of 600 consecutive cases with but one death. Surg., Gynec. and Obst., XXXIX, p. 349, Sept., 1924.

Pennington, J. R.: Treatment of anal, ano-rectal, and rectal fistulae. Internat. Clin. Phila., XXXIV, s. 1, p. 138, 1924.

Martin, J.: Fistula vésico-rectale chez prostatique; guérison rapide sous l'influence d'un sondre à demeure; prostatectomie hypogastrique. Jour. d'urol. med. et chir., XVI, p. 229, 1923.

Symonds, C.: Gonorrhoeal stricture of the rectum. Proc. Roy. Soc. Med. (Sect. Surg.), XVI, p. 16, 1923.

David, V. C.: Congenital rectal stricture as the cause of infantile megacolon. Surg., Gynec. and Obst., 1923, XXVII, p. 197.

Yoemans, F. C.: Circular amputation for marked first and second degree prolapse of the rectum. Tr. Am. Proctol. Soc., XXIV, p. 10, 1923-1924.

Lynch, J. M.: A new operation for prolapse of the rectum. Jour. A. M. A., LXXXII, p. 1929, 1924.

Montague, J. F.: Pathology of pruritus ani, vulvae and scroti. Proc. N. Y. Path. Soc., XXIII, p. 231, 1923; also XXIV, p. 16.

Cohn, A.: Gonorrhea of rectum from perforation of gonorrheal abscess. Med. Klinik., XX, p. 315, Mar. 9, 1924.

Pagniez, P., and Coste, F.: Rectum perforation in tabes. Bull. et mém. Soc. Méd. de hôp. de Par., XLVII, p. 1406, Nov. 2, 1923.

Vogler, K.: Spontaneous cure of rectal fibro-lipoma by torsion of the stem. Munch. Med. Wchnschr., LXXI, p. 136, Feb. 1, 1924.

Dolbey, R. V., and Fahmy, I.: Bilharzial papillomatosis of rectum. Lancet, I, p. 487, Mar. 8, 1924.

Stookey, B.: Bladder and rectal disturbances in spinal cord tumors. Arch. Neurol. and Psychiat., X, p. 519, Nov., 1923.

◆

DEPARTMENT OF COMMERCE, WASHINGTON

Automobile Fatalities January 1 to July 18, 1925

Washington, D. C., August 3, 1925.—The Department of Commerce announces that reports of automobile fatalities in 1925 have been received from 77 cities of 100,000 population or more. Thirty-six of these cities show more automobile fatalities in the four-week period ending July 18 than in the previous four-week period. The following seven cities show no fatalities for the last four weeks: Bridgeport, Norfolk, Oakland, Oklahoma City, Spokane, Springfield, Mass., and Tacoma. New Bedford, with two deaths still holds the record for 1925.

For 57 cities with an aggregate population of 27 million, there were 2,511 automobile fatalities reported in the period January 1 to July 18, 1925, as contrasted with 2,438 such fatalities in the period January 1 to July 31, 1923. Of these 2,511 deaths, 418, or 17 per cent, were reported in the four-week period ending July 18, 1925.

Of the 65 cities for which comparisons are possible for the early months of 1923 and 1925, 33 show more automobile fatalities reported in the period January 1 to July 18, 1925, than occurred in the first seven months of 1923.

So far this year New York City has reported 501 automobile fatalities, Chicago 299, Philadelphia 149, Detroit 127, and Los Angeles 122, while for the last four-week period the figures are New York City 76, Chicago 45, Philadelphia 33, Detroit 25, and Los Angeles 14. Figures for the New England cities are given in the table.

Automobile Fatalities Reported During the Four Weeks Ending July 18, 1925

AND

Automobile Fatalities Reported So Far This Year, January 1 to July 18, 1925

(Figures show deaths in each city, regardless of place of accident, and regardless of residence.)

		Number of Automobile Fatalities							
		Reported			Occurred				
		Four weeks ending						Rate per 100,000	
Place of death	Estimated population July 1, 1925*	July 18, 1925	June 20, 1925	Jan. 1 to July 18, 1925	1924	1923	Jan. 1 to July 31, 1923	1924	1923
Boston	783,166	6	14	66	142	133	62	18.3	17.3
Bridgeport	†	0	1	6	21	23	6	†	†
Cambridge	112,444	2	2	13	27	28	13	24.1	25.1
Fall River	121,156	1	0	8	16	22	10	13.2	18.2
Lowell	116,421	2	1	7	23	18	11	19.9	15.6
Lynn	104,704	2	0	5					
New Bedf'd	135,132	1	1	2	13	8	3	9.8	6.2
New Haven	178,927	2	4	15	48	28	13	27.3	16.2
Providence	245,112	10	8	50	57	52	26	23.4	21.5
Somerville	102,073	1	0	3					
Springfield	152,578	0	1	4	27	23	9	18.2	15.9
Worcester	198,883	3	2	11	29	33	17	14.8	17.2

Note—For the spaces left blank, data not available.

*Estimates for cities in Massachusetts are tentative, pending State census figures.

†Figures omitted, pending the establishment of more satisfactory estimates of population.

KENTUCKY'S CRIPPLED CHILDREN

A drive for $100,000, to be spent in aiding crippled children in Kentucky, is announced by the Kentucky Society for Crippled Children.

Case Records
of the
Massachusetts General Hospital

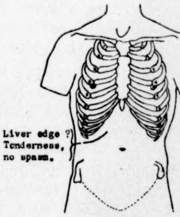
ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

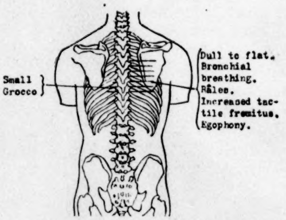
EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 11321

MEDICAL DEPARTMENT

An Irish-American of forty-one, a spinner in a cotton mill, entered April 10 through the Emergency Ward complaining of prostration. His family history was not important. He was very nervous and irritable, worked hard and worried a good deal. For years he had urinated once almost every night. He drank irregularly; before his marriage, seven years before admission, he drank hard. His past history was otherwise negative except for several mild attacks of grippe and two severe ulcerated sore throats two and four years before admission.





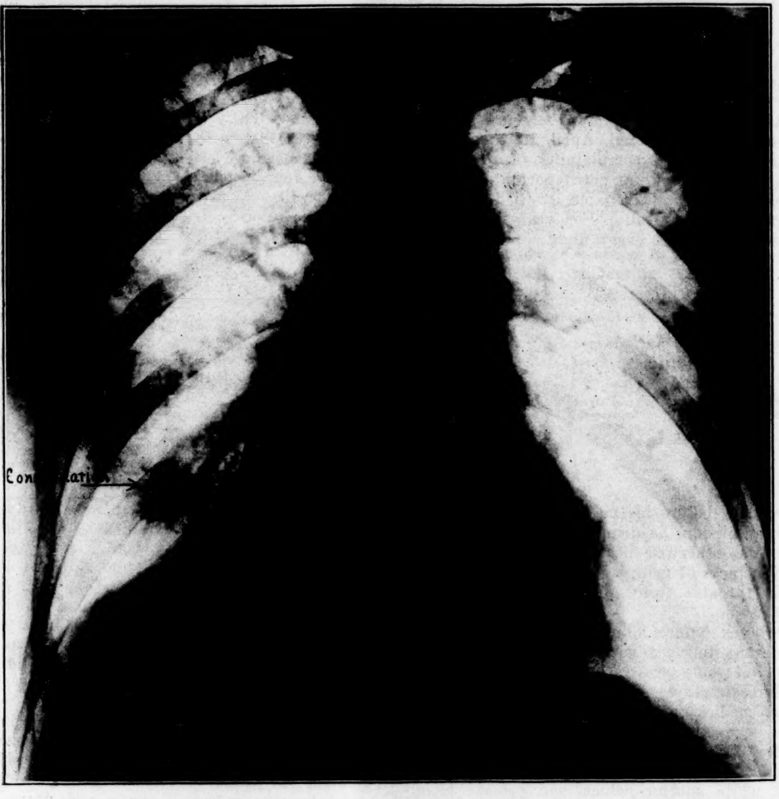
A week before admission he began to have moderate diarrhea with malaise, loss of appetite and some prostration. One doctor gave him medicines to clear out his bowels and another medicine to stop the diarrhea. In addition he took some medicines of his own. Six days before admission he began to cough and a day or two before admission to produce yellow and white sputum which had become bloody and rusty. Several times during the week he had had mild chills at night and all the week headaches. For two days he had had hiccup.

Examination showed a well nourished, flushed, hot man not acutely ill. The throat was red and dry. The chest expansion was greater on the left. The signs in the right back were as shown in the diagram. The heart showed no abnormalities except a double pulmonic second sound, not accentuated, and a rate of 100-110. The blood pressure was 125/80. The abdomen was distended. An indefinite liver edge was felt. There was tenderness but no spasm in the right upper quadrant.

The temperature was 99° to 102.8° until April 16, then 100° to 106.5° except for drops to 98.6° and 98° April 28 and 30. The pulse was 74 to 140, with a terminal rise to 160. The respirations were 20 to 47, with a terminal rise to 57. The urine was alkaline at four of five examinations, showed the slightest possible trace of albumin at the first, rare to occasional leucocytes at all, rare red blood cells at one. The amount was 30 to 110 ounces, the specific gravity 1.006 to 1.010. The hemoglobin was 75 to 65 per cent., the leucocytes 18,800 at entrance, falling to 8,700 April 23; afterwards 18,900 to 28,700. The polynuclears were 90 to 86 per cent. The reds were normal until May 1, then 3,400,000, with achromia. A Wassermann was negative. The sputum showed blood at two of four examinations, much pus, no tubercle bacilli. Pneumococcus Type I was isolated.

The patient looked in such good condition that it was decided upon the report of the type of pneumococcus not to give antibody solution. By the 18th the lungs were clear. The temperature however continued high and April 24 was again rising. He complained of pain in the right upper quadrant, had chills and nausea. Emergency X-ray showed the right lung less radiant than the left. The diaphragm was a little high on both sides, the respiratory movements limited on the right, its outline however sharply defined. The costophrenic sinus was not obliterated. There were unusually prominent lung markings throughout the right chest and increase in the hilus shadow on this side. There was no evidence of fluid. April 24 the signs below the angles of the scapula were as before except that bronchial breathing was nearly absent. At the right base there was dullness with increased whispered voice and tactile fremitus. There was no egophony. April 27 and 29 blood cultures showed pneumococcus. The temperature showed wide swings from 105° to normal, with violent chills, particularly in the evening. April 28 X-ray (see illustration) confirmed the previous observations. The markings in the lower right chest appeared somewhat increased in extent, suggesting consolidation. The diaphragm on the right was elevated. April 30 intravenous administration of Felton's antibody solution was begun and was continued for three days, seven doses in all. May 1 Dr. P. D. White reported to-and-fro murmurs at the base, short systolic and diastolic whiffs.

May 3 the patient complained of headache and had stiff neck and bilateral Kernig. A lumbar puncture gave 15 c.c. of turbid colorless fluid, initial pressure 280, after removal of 30 c.c. 80, pulse and respiration normal, 3,200 leucocytes, 98 per cent. polymorphonuclears, frequent intra- and extracellular Gram-positive diplococci; alcohol and ammonium sulphate strongly positive, Wassermann negative, total protein 380, goldsol 11111123332, sugar 8, chlorides 609; culture showed pneumococci.



April 28. The right lung is less radiant than the left. The lung markings were unusually prominent throughout the right chest in the earlier plates, and the hilus shadow increased on this side. The markings in the lower right chest now appear somewhat increased in extent, suggesting consolidation. The diaphragm on the right is elevated. The costophrenic sinus is not obliterated.

The patient was irrational, grew gradually worse, and May 6 died.

Discussion

BY DR. MAURICE FREMONT-SMITH

The history of moderate diarrhea with malaise, loss of appetite and prostration, suggests the inception of typhoid. The cough and sputum would still be consistent with that diagnosis, as bronchitis is frequent as an early symptom of typhoid fever. A bloody or rusty sputum, however, and chills are both extremely rare in typhoid. Hiccup is rare in typhoid. In an ill patient it is always a bad prognostic sign, suggesting as it does kidney insufficiency or diaphragmatic irritation, and sometimes encephalitis.

Up to this point the picture suggests an acute upper respiratory infection with probable bronchial pneumonia in a patient suffering from kidney insufficiency. If the chest signs indicated were due to pneumonia the patient must have been much sicker than described. The signs themselves are here conflicting, those on the right being the signs of consolidation. The Grocco, if present, on the other hand, almost proves the presence of fluid. Pneumococcus Type I does not produce a bronchial pneumonia. The patient must therefore have come in in an attack of lobar pneumonia. Why he was not sicker than he was is difficult to say. As a matter of fact the hiccup mentioned, to my mind, throws considerable doubt upon the patient's good condition.

With regard to the kidney lesion, the specific gravity of the urine is fixed and we should have expected to find hyalin, finely granular casts and probably red cells in the urine. It is possible that a fresher sediment would have shown casts, especially as we know casts are dissolved in an alkalin urine. On the other hand except for the fixation of specific gravity the urinary pictures can be explained entirely on the basis of an acute respiratory infection.

The finding of a Type I pneumococcus in the sputum of a patient may at the present time considerably embarass the attending physician. If the patient has been ill for seventy-two hours or over the question of the giving of pneumococcus serum need not arise. If the sputum is typed, however, before the end of the third day decision must be reached at once as to whether or not to give antipneumococcus serum or antibody solution. While the figures regarding patients treated after the third day show no convincing lowering in the mortality, it would seem that patients treated with pneumococcus serum Type I within the first seventy-two hours have a slightly better chance of recovery than those not so treated. I am not familiar with the results of treatment by antibody solution, which is a protein-free concentrated solution of the eu-globulin fraction of mixed Types I, II and III pneumococcus sera. It is claimed by those favorable to this antibody solution that the protective substances are precipitated with the eu-globulin fraction. It is certain that the hemolysins, agglutinins etc. are so precipitated, and it is probable that in the case of pneumococcus serum the protective substances run parallel with these agglutinins and are precipitated in the same fraction with them. It is probable, too, that in this particular case of pneumococcus serum the protective substances run parallel with these agglutinins and are precipitated in the same fraction with them. It is probable, too, that in this particular case the agglutinins and hemolysins play a definite role in the destruction of the organism. It is not always true, however, that all these "antibodies" always play an active part in the production of immunity. Granted that such be the case in pneumococcus immunity, it would seem rational to believe that the early injection of these substances, concentrated by precipitation from the immune serum itself, should be a valuable procedure, especially since by means of this precipitation the large proportion of protein is removed from the serum, and protein reactions with the antibody solution do not occur.

It would seem that the patient was now developing subdiaphragmatic abscesses on the right side. The markings on the right chest are no more than would be expected on the subsidence of an acute infection of the lung.

The patient then developed another patch of lobar pneumonia and positive blood cultures. The chills may be ascribed either to the breaking off of small showers of emboli from the heart valves, where an acute endocarditis is evidently in progress, or to the septic condition associated with a collection of pus beneath the diaphragm.

By May 3 the patient has developed a pneumococcus meningitis with a spinal fluid consistent in all respects save for the sugar, which I should think high.

I believe we shall find on necropsy evidence of acute vegetative endocarditis, subdiaphragmatic abscess with either a pneumococcus pleurisy or a patch of lobar pneumonia on the right, possible infarcts in liver, spleen, kidneys, and a pneumococcus meningitis.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Lobar pneumonia.
Pneumococcus septicemia.
Pneumococcus meningitis.
Pneumococcus endocarditis.

DR. MAURICE FREMONT-SMITH'S DIAGNOSIS

Acute vegetative endocarditis.
Subdiaphragmatic abscess.
Pneumococcus pleurisy, right, or a patch of lobar pneumonia.
Possibly infarcts in the liver, spleen, kidneys.
Pneumococcus meningitis.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesions*

Chronic and acute endocarditis of the aortic valve, pneumococcus.
Acute pericarditis.

2. *Secondary or terminal lesions*

Lobar pneumonia, right.
Edema of the lungs.
Hypertrophy of the thyroid gland.
Soft hyperplastic spleen.
Infarct of the left kidney.

3. *Historical landmarks*

Chronic pleuritis.

Dr. Richardson: The head was not examined.

The diaphragm on the right was at the fourth rib, on the left at the fifth rib.

The lungs were bound down by old pleural adhesions. The thyroid gland was markedly enlarged, 11 cm., by 9 cm., by 5 cm. over all. It was rather symmetrical. The tissue was that of a hypertrophied thyroid. No thymic tissue was found. The trachea and bronchi contained mucopurulent fluid material, in greatest amount on the right. The bronchial glands were negative. The lower lobe and the posterior portion of the upper lobe of the right lung showed frank gray-red pneumonia. The tissue elsewhere was spongy, with much edema. The tissue of the left lung was spongy to a little leathery and saturated with thin dirty reddish frothy fluid.

The pericardium contained about 50 c.c. of thin cloudy fluid and fibrin. The surface showed small hemorrhagic areas and was coated with dirty reddish fibrin. The heart weighed 365 grams, full size, no definite hypertrophy. The myocardium was of fair consistence and pale. The right ventricle wall was 3 mm., the left ventricle wall 12 mm. The columnae carneae were a little flat on the left, fairly well marked on the right. There was slight dilatation of the left ventricle. The right cavities sowed moderate dilatation. The aortic valve was 6 cm. in circumference. On the left posterior cusp there was a roughly spherical mass 2 cm. in diameter rather firmly attached to the cusp. The cusp showed fibrous thickening and deformity. This mass pulled the cusp downward, and the sinus of Valsalva was correspondingly enlarged. The mass consisted of dirty brownish spongy material becoming firmer and more fibrous in the region of the cusp curtain. At the base of the cusp extending for a short distance along the endocardium there was a small grayish area with an irregular surface which was continuous with the mass mentioned and which covered over a small collection of purulent material. Cover glass from this purulent material showed leucocytes and pneumococcus-like forms. The anterior cusp was negative. The right posterior cusp showed a small brown granular patch on its inferior surface. The mass on the left posterior cusp obstructed the opening of the valve to a considerable extent.

The liver weighed 1790 grams. (Normally 1200-2400.) The surface was smooth,—some congestion. The spleen weighed 420 grams, considerably enlarged. The tissue presented as pinkish brown-red mush,—soft hyperplastic spleen. In the left kidney there was a frank infarct.

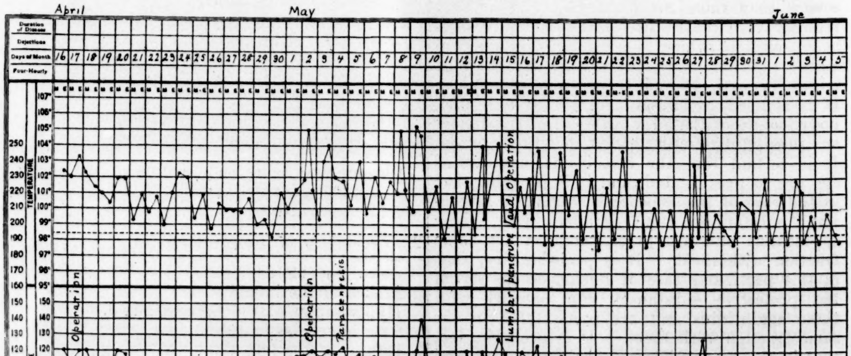
The cecum was long and rested a little to the left of the median line, with a large negative appendix resting in the lower left quadrant.

A case then of chronic and acute endocarditis of the aortic valve, pneumococcus infection with associated pericarditis pneumonia.

CASE 11322

Neurological Department

A boy aged eight years, who had had adenoids and tonsils removed at two years because of cervical adenitis and deranged digestion, was in apparently good condition until April 12, when he had acute inflammation of the *right ear* following a head cold. The right drum was incised. Usual treatment. There was free discharge and irregular temperature (see chart) until April 17, when some adenoid tissue was removed. The temperature dropped by lysis until the 17th, when 104° was reached. It de-



clined, then again rose for the three succeeding days. No other cause than the ear or possibly some intranasal infection was found. There were no chills. The findings of a pediatrician were negative in every way except for the aural condition. May 2 the leucocyte count was 17,700.

Fearing general infection from a lateral sinus, the right mastoid cells were opened May 3. There was no mastoid tenderness or edema. The canal wall drooped slightly. There was free discharge. At operation the cells were not broken down. They were filled with fresh granulations and the bone bled profusely. Culture from the wound showed streptococcus hemolyticus.

There was improvement for three days. Then the *left ear* pained and the drum was incised. Beginning the fifth day after the left paracentesis the temperature rose for two days. May 9 the leucocyte count was 13,500. Meanwhile the boy's condition was fairly good. He had high fever for four days following. A blood culture showed streptococcus hemolyticus in pure culture. The *left ear* continued to discharge and it was felt that one of the lateral sinuses must be involved, with perhaps left mastoid infection as a factor. In that a diagnosis of lateral sinus thrombosis could not be assured, nor could the side affected be certain, the following dynamic studies on the cerebrospinal fluid were carried out on May 15:

Lumbar puncture performed under ether, patient lying on the left side.

- Initial pressure 175 mm.
- Jugular compression by Dr. Karl Percy.
  - Right jugular. Pressure rose to 230 mm. Sluggish, both up and down.
  - Left jugular. Pressure rose to 260 mm. Prompt, both up and down.
  - Both jugulars. Pressure rose to 400 mm. Prompt, both up and down.
- Withdrawal of 15 c.c. reduced pressure to 100 mm.
- Repetition of jugular compression, Dr. Percy.
  - Right jugular rose to 150 mm.
  - Left jugular rose to 220 mm. More prompt than right.
- Repetition of jugular compression, Dr. Ayer.
  - Right jugular rose to 160 mm.
  - Left jugular rose to 280 mm.

The impression obtained from the dynamic studies was that there was a marked retardation as well as a smaller amplitude of pressure increase on compression of the right jugular vein.

The other fluid findings were as follows:

Cells, 1 per cu. mm.
Total protein, 20 mgm. per 100 c.c.
Globulin 0.
Goldsol 0000000000.

Immediately following the fluid tests operation was done. After it the patient made an uninterrupted recovery except for areas of toxic erythema which occurred about the wound and two areas which were carried by the fingers elsewhere. This explains the subsequent temperature rises occurring in the three weeks of convalescence. At present, June 17, all three wounds are practically healed and the boy is going about fully dressed.

Discussion

BY DR. JAMES B. AYER AND DR. D. HAROLD WALKER

Dr. Walker: There is nothing unusual in this history. It is a case of acute suppurative inflammation of both middle ears with mastoiditis, and the complication of an infection of one lateral sinus. Twenty years ago such a condition would not have been recognized until a thrombus had formed and had extended into the internal jugular vein in the neck. When edema was present poulticing would aid in abscess formation and incision would be resorted to. The patient might or might not recover. Now we attempt to make a diagnosis early, and if the "cardinal" symptoms are present, such as a septic temperature, headache, a marked leucocytosis, congestion of the opthalmic veins and edema under the auricle, one may be fairly sure of the diagnosis. Frequently the only symptom is a fever with a morning remission and an evening rise, and possibly a leucocytosis. It is very necessary to eliminate all other possible foci, such as pyelitis, etc. Our real difficulty occurs in just such a case as this one, where both mastoids are involved; where there is a positive blood culture, a septic temperature, and no means of determining which lateral sinus is involved, if either.

There were no objective signs of any kind, and the continued high fever after the first mastoid was opened led one to be suspicious of the second one as possibly having infected the left lateral sinus. At this point we were fortunate in having Dr. Ayer in consultation. Dr. Ayer will describe his method of measuring the intracranial pressure and of determining pretty conclusively whether a sinus is entirely or partially thrombosed, and which one.

As you see by the conclusions drawn, the right sinus was probably at least partially thrombosed. After ligation of the right internal jugular vein the sinus was incised and a mural thrombus demonstrated. The child made an uninterrupted recovery as far as the aural condition was concerned. Some areas of skin infection caused an occasional sharp rise in the temperature.

Dr. Ayer's method marks a most important epoch in otological surgery.

Dr. Frank Fremont-Smith: How early do you get choked discs in lateral sinus thrombosis?

Dr. Walker: My experience is that they occur only when the thrombus has become organized and there is some intracranial pressure,—in the rather late cases, not early.

Dr. Fremont-Smith: Would you say over a week?

Dr. Walker: I should say nearer three or four weeks.

Dr. James B. Ayer: The point brought out in the clinical resumé up to the time of the last operation is that the boy has infection of both ears and a septic temperature, and it is suspected that there is some other trouble. It is not known what the complication is, but sinus thrombosis is suspected; inasmuch as both ears are affected either sinus may be involved. It is in just such cases as this that our spinal fluid tests are shown to be of value.

If you will glance at the protocol of the dynamic tests as carried out it will be seen that on every occasion the spinal fluid pressure rise following compression of the right jugular vein was less in amplitude and more sluggish than the rise from pressure on the left side. The tests were performed under initial pressure and after the pressure had been reduced by withdrawal of fluid. Also both Dr. Percy and I obtained the same result. What is the significance of this difference in pressure rise following jugular compression on each side separately? Obviously either a physiological or a pathological difference in the size of the two jugular veins or lateral sinuses. Dr. Mosher tells me it is rare to find a marked difference in the lateral sinuses. It seemed likely therefore that we were dealing with a partial obstruction to venous outflow from the cranium, and a presumptive diagnosis of mural thrombosis was made.

Dr. Walker exposed the left mastoid and found no lead through to the dura. He then exposed the right mastoid and right sinus. On opening the sinus after previously ligating the jugular vein in the neck he found a mural thrombosis.

The points I wish to bring out in this case are, first, the difficulty in the clinical diagnosis of sinus thrombosis, and secondly, to stress the value of newer spinal fluid tests not only in the diagnosis of thrombosis but as an index to which side the thrombus is on.

I might say one word more about the fluid test. The test is obviously more certain in complete block of the sinus than in this case, where the block was only partial. The mechanical difficulty of compressing exactly alike two jugular veins is obvious. Then again, anatomical variations must occur, even although slight, which will cause inequality in rise in pressure on the two sides. As a matter of fact we have in the Nerve Department carried out quite a series of estimations comparing the two sides in cases in which no sinus thrombosis was suggested, and considerable difference in pressure rise was noted. Therefore I think that we shall occasionally be mistaken in our diagnosis of mural thrombosis; but in cases of complete thrombosis there should be little chance for error.

Dr. Fremont-Smith: Is it a real advantage to tie the jugular in the neck before operating on the sinus? Is that an important thing to be able to do?

Dr. Walker: We think it is, because if we should dislodge a piece of the thrombus it might be carried in the blood stream and cause an infarction in the lung or liver or kidney. So we always do it for safety's sake.

Dr. Fremont-Smith: So it is a real advantage to be able to demonstrate which sinus is thrombosed before opening either side?

Dr. Walker: Yes. If one should tie the wrong vein, the other being thrombosed, general edema of the entire head would result. Eventually the collateral circulation would be sufficient.

DIAGNOSIS

Sinus thrombosis.

CASE 11323

Surgical Department

An American housewife who gave her age as thirty-three was brought to the Emergency Ward by her surgeon March 22 for relief of stercoraceous vomiting and a temperature of 103° the night before admission. No past history or family history was obtained before operation except that she had a son of eighteen.

Eight years before admission she had an operation at a hospital. The surgeon thought the appendix and tubes were removed, but had not looked up the records. For the past five years she had had occasional attacks of vomiting never lasting more than an hour, usually with but one emesis. For two days she had had pain in the abdomen and severe vomiting. An enema thirty hours before admission gave good gas and fecal results; later enemata gave no results. The nurse in charge said that the vomiting had been fecal the day of admission but was not so at admission. The patient had been given a grain and a quarter of morphia during the twenty-four hours before admission.

Examination showed a pale, haggard woman vomiting occasionally. The tongue was dry and slightly coated. The abdomen was slightly distended, tympanitic and generally tender. No masses were felt. The pupils were pinpoint. Examination was otherwise negative except for an operative scar in the right lower quadrant. Before operation the chart, urine and blood are not recorded.

Operation was done the afternoon of admission. The patient was very ill next day. It was observed that the skin was swarthy. The pulse was rapid and of poor quality. A systolic murmur was heard over the precordia. From late in the afternoon up to midnight she vomited a teaspoonful of bright blood and two basinfuls of old dark blood. Next day she was definitely jaundiced. She continued to vomit old dark blood almost incessantly.

It was now found that thirteen years earlier she entered the hospital for study of a grave anemia with pallor and weakness of two months' duration. She gave her age at that time as twenty-two, and a history that one sister died of anemia and another was very anemic. The patient had had three attacks of rheumatic fever at eighteen, nineteen and twenty. She had three children, all delivered instrumentally. The year before admission she began to grow rapidly pale and weak, improving before her last delivery and making an uneventful convalescence. Examination showed the apex impulse of the heart in the fifth space three cm. outside the midclavicular line. The right border of dullness was 3 cm. from the midsternum. The sounds were rapid and of poor quality. A loud rough systolic murmur was heard over the precordia, loudest at the apex, transmitted to the axilla. The pulmonic second sound was slightly accentuated. Both second sounds were reduplicated at the base. The hemoglobin was 22 to 33 per cent., the leucocytes 5,000 to 6,000, the polynuclears 60 per cent., the red count 800,000 to 1,200,000. There was marked variation in size and shape, occasional polychromatophilia and stippling, color index 5/4 to 7/5, serum ring present. Two blasts were seen at one exmination. The blood pressure was 105/55. After eleven days in the hospital she was discharged unrelieved.

March 24 the temperature rose to 104°, March 25 the pulse to 138, the respiration to 29. That day she died.

DISCUSSION

BY DR. EDWARD L. YOUNG, JR.

The suggestion here is that mentally this patient is not entirely oriented.

If it is true that she had had fecal vomiting of course that means reversed peristalsis, and that means some form of acute intestinal obstruction. That, the pain, and failure to get results from enemata in the past thirty hours all spell acute intestinal obstruction.

The pinpoint pupils were, of course from the grain and a quarter of morphia.

It is true that the majority of forms of acute intestinal obstruction do not have high temperature. We are not told what her pulse was.

MISS PAINTER: It was not recorded before operation.

DR. YOUNG: All that we have a right then to discuss so far are the facts that we have been given, and it seems to me that we have no right to make any diagnosis other than acute intestinal obstruction, because the only facts here are those that point toward that.

Can we get any hint as to the possible cause of obstruction? In the first place, pain and temperature. Pain of the severity of this thing points towards strangulation, whether volvulus, internal concealed hernia, or a band across a loop of intestine with strangulation of that. As a rule mesenteric thrombosis does not cause pain, and generally none of the conditions which I have mentioned cause a temperature of 103° in 48 hours. Is it possible that the old operation which she had resulted in bands? That is the thing we always think of with previous operation. I assume that the vomiting came early in this attack. If so it is presumably high in the small intestine. That goes with the fact that the enema gave good gas and fecal result. Following that there was no result. It seems to me that the only thing we can do is to make a diagnosis of obstruction and to go in on that basis.

Where should one make the incision? On the basis of previous operation I should assume that the incision should be near that, because whether her age is thirty-three or thirty-eight she is not at the age where we expect sudden onset or shutting-down of cancer, and incision below the umbilicus will reach more of the probable causes of trouble than will incision above the umbilicus.

Is there anything that can be done with these cases in a preoperative way? Of course the thing is an immediate emergency, and the sooner the operation is done the better chance the patient has, but these patients are thoroughly dehydrated, and I believe always that the slight delay necessary to get in fluid subpectorally is a delay well worth while.

If there has been stercoraceous vomiting the emptying of the stomach with a tube is also worth while. It may prevent lung complications. Beyond that the quicker the operation the better.

Of course where a patient is desperately sick the wisest thing to do is to open the abdomen under local, pick up a coil of dilated gut as low down as possible, bring it into the wound for drainage, and do nothing else. It may be the life-saving measure which will enable one to do a second operation on a live patient. Of course all that depends on the judgment of the surgeon at the time of operation. There is no rule of thumb for it.

DR. YOUNG'S PRE-OPERATIVE DIAGNOSIS

Acute intestinal obstruction.

PRE-OPERATIVE DIAGNOSIS

Acute intestinal obstruction.

OPERATION

Although no peristalsis was audible on auscultation, although the abdomen felt rigid rather than tense and although frequent vomitus in the Emergency Ward was not stercoraceous, a diagnosis of intestinal obstruction was made from the statement of the patient's doctor.

Gas-ether. Seven-inch left lower rectus muscle splitting incision. The peritoneum was opened with the escape of quantities of thin yellow pus. The pelvis was bailed out. Just to the left of the midline in the region of the spine was felt a mass the size of a fist. The left flank was bailed out. The mass was separated and proved to cover a stiff, black, leathery, perforated appendix about four and a half inches long and the size of a thumb, closely applied across the lumbar spine. This was freed, clamped and tied with some difficulty. A cigarette drain was placed at the site of the stump and the omentum was arranged about to wall off the intestines. Another drain was placed to the left of the pelvis and the abdomen closed.

PATHOLOGICAL REPORT

An appendix totally gangrenous.

Acute appendicitis.

FURTHER DISCUSSION

I do not quite understand why they went to the left. I should go to the midline or to the old scar.

We get so tired of saying that anything may be an acute appendix in an acute abdomen that I sometimes leave it out, and every time I do it is an appendix. Frankly, I never thought of it, because when we have a scar of a right incision we expect that the story is true that the appendix has come out. Of course she did have acute obstruction, but we entirely missed the cause of it. I do not know whether we should have paid more attention to a temperature of 103° or not, because acute intestinal obstruction of mechanical origin in the first forty-eight hours should not have that.

From the description of what has gone on so far there is no reason to assume that she should have blood in the intestinal cavity. Of course the jaundice suggests that with this infection there is thrombophlebitis with infection of the liver. But this is very rapid. We do not as a rule get the ascending infection and the resulting jaundice as early as this. And I do not see how even if that has happened it could account for the blood.

The old history may help us out, because it sounds as if she had either a definite pernicious anemia or one of the types of the splenic-hepatic jaundice and anemia which go on to more and more trouble and death. That may well, I suppose, explain the vomiting,—old blood from the varices present following the liver change.

So far as death is concerned it seems to me we can lay it either to a spreading infection in the peritoneum or above the diaphragm. There is really very little else. As regards the other condition certainly I know too little about it to say anything very definite. I should ask for a medical consultation as to just where in that syndrome of spleen-liver-anemia-jaundice they might perhaps place this woman on the basis of the facts they knew and could obtain.

Miss Painter: They made a diagnosis at that time of pernicious anemia.

Dr. Young: So that we might assume, with the changes that followed, that may be responsible for the bleeding here. Because I certainly do not think it could come from such a rapid liver change.

Dr. Richardson: Was the blood examined?

Dr. Young: Not this last time. Before, yes, and we had everything suggestive of pernicious anemia. She was here for only three days at the last entry.

Dr. Frank Fremont-Smith: Pernicious anemia at the age of twenty-two is extremely rare.

Miss Painter: Didn't she lie about her age?

Dr. Fremont-Smith: So that she might have been thirty when she first came in.

Dr. Young: Could we count on that somewhat debatable condition, the splenic anemia syndrome?

Dr. Fremont-Smith: I should suppose we might. I should expect however to have a very big spleen at this time. There is no history of any purpuric spots.

Dr. Young: I think all we can say is that we have not evidence enough to make any very definite statement, but enough to speak of some change of this type which might account for the blood.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Acute appendicitis.
General peritonitis.

DR. EDWARD L. YOUNG'S DIAGNOSIS

Acute appendicitis.
General peritonitis?
Anemia?

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

(Acute gangrenous appendicitis.)

2. *Secondary or terminal lesions*

General peritonitis.
Icterus.
Cholelithiasis.
Hemorrhagic necrosis and disintegration of the wall of the esophagus.
Fibrinopurulent pleuritis.
Chronic endocarditis of the aortic, mitral and tricuspid valves.
Hypertrophy and dilatation of the heart.
Slight chronic passive congestion.

3. *Historical landmarks*

Appendectomy.
Salpingectomy.
Slight chronic pleuritis, right.

Dr. Richardson: The bone marrow was not examined histologically in this case, but there were no evidences of pernicious anemia macroscopically.

The head was not examined. The skin and conjunctivae showed yellowish discoloration.

The abdomen showed no definite distension, and the wall was soft, yet the peritoneal cavity contained much brownish purulent fluid with well marked general peritonitis. At the base of the appendix, the rest of which was wanting, was an intact ligature. The esophagus from a point about opposite the bifurcation of the trachea down to the lower end showed much hemorrhagic necrosis and disintegration.

In each pleural cavity there was at least 300 c.c. of purulent brownish-red fluid, a little bloody in places. The lungs showed generally a slight amount of chronic passive congestion. The pleura of the lungs was coated with exudate.

The pericardium contained a slight excess of thin pale fluid, 100 c.c., but was otherwise negative. The heart weighed 390 grams, considerably enlarged for her. The myocardium was of good consistence, pale brown red, the right side five millimeters thick, the left twelve millimeters. There were well marked columnae carneae. The left ventricle showed slight dilatation, the left auricle much. On the right side the ventricle showed slight, the auricle considerable dilatation. The circumference of the mitral valve was five centimeters. The curtain showed much fibrous deformity and thickening,—a rather well marked chronic endocarditis of the mitral valve. She called attention to that in her history. The aortic valve measured five and a half centimeters. The cusps showed a moderate amount of chronic endocarditis. The tricuspid valve circumference was ten centimeters, also showing a slight amount of chronic endocarditis.

The liver showed some bile-staining. The gallbladder contained two stones twelve millimeters in diameter. The mucosa was negative and the bile-ducts free and negative. The spleen weighed 295 grams, slightly enlarged. The tissue was negative. The kidneys showed some bile staining. The proximal third of each ovarian tube was wanting. The distal two-thirds of each tube was present and negative.

Dr. Richardson: The stomach contained much brownish-red somewhat bloody fluid and mucus. The mucosa was negative. The esophagus showed the areas of necrosis mentioned.

Dr. Young: Due to sepsis?

Dr. Richardson: Yes. Of course the differential here has to be made carefully at times because of post-mortem changes.

Dr. Young: Then the jaundice was due to cholelithiasis or sepsis?

Dr. Richardson: To sepsis.

THE CAPTURE OF DR. HARVEY J. HOWARD

Attacks on the ranch of Morgan Palmer in Manchuria resulting in the death of Palmer and the capture of Dr. H. J. Howard are of especial interest because this shows the lawlessness and brutal disregard of the service rendered by these men in China.

Mr. Palmer had been a teacher in China and had served as head of the Red Cross during the famine of 1921.

Dr. Howard, an eye specialist, who was attached to the Rockefeller Institute in Peking was born in Churchville, New York, took medical courses in the University of Michigan and postgraduate work at the University of Pennsylvania and Harvard. He was chief of the Department of Aphthalmology at Peking Union Medical College.

It is assumed that Dr. Howard is alive in the hands of the bandits.

PHYSICIANS SHOULD BE TAUGHT PSYCHOANALYSIS

Professor Sigmund Freud, the originator of psychoanalysis, in an interview today, explained the purposes of the recently announced international psychoanalytical foundation, of which he is to be chairman. Dr. Freud is now recuperating at a mountain resort near Vienna, and though shut off from the whole world and refusing to see any one, he considers the foundation of such importance that he agreed to be interviewed on it.

Dr. Freud claims "that harm is done by the practice of psychoanalysis by 'quacks' goes without saying. None would ask what harm was done by people who treated wounds, taught children, repaired watches, or built houses without having learned to do so.'

"I am of the opinion that no one is entitled to practice analytical therapeutics who is not possessed of thorough training in psychoanalysis, no matter whether he is a graduate physician or not."

The international psychoanalytical foundation is intended to promote true knowledge of psychoanalysis, to counteract the practice of quacks and to enlarge the existing psychoanalytic institutions, to supoprt psychoanalytical publications and maintain American scholarships in Europe.—*Excerpt from letter to N. Y. Times.*

CHILD-WELFARE EXPOSITION, BELGIUM

An international child-welfare exposition will be held in Antwerp next October, under the auspices of the Belgian Children's Bureau and other public authorities. Five sections are planned: Maternity and child welfare; physical education; food; clothing; and the mother and child in art, folklore, and literature.

THE BOSTON
Medical and Surgical Journal
Established in 1828

Published by The Massachusetts Medical Society under the **jurisdiction** of the following-named committee:

For three years William H. Robey, Jr., M.D.
Roger I. Lee, M.D.
Robert B. Osgood, M.D.
For two years James S. Stone, M.D.
Horace D. Arnold, M.D.
Channing Frothingham, M.D.
For one year Homer Gage, M.D., *Chairman*
Edward C. Streeter, M.D.
Edward W. Taylor, M.D.

Editorial Staff
David L. Edsall, M.D.
Walter B. Cannon, M.D.
Reid Hunt, M.D.
Francis W. Peabody, M.D.
John P. Sutherland, M.D.
S. Burt Wolbach, M.D.
George R. Minot, M.D.
Frank H. Lahey, M.D.
Stephen Rushmore, M.D.

Walter P. Bowers, M.D., *Managing Editor*

Associate Editors
George G. Smith, M.D.
William B. Breed, M.D.
Joseph Garland, M.D.

Subscription Terms: *$6.00 per year in advance, postage paid for the United States, $7.56 per year for all foreign countries belonging to the Postal Union.*

Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the Journal office, 126 Massachusetts Ave.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to The Boston Medical and Surgical Journal, 126 Massachusetts Ave., Boston, Mass.

A PROFESSIONAL WEAKNESS

One outstanding fact which should be recognized by physicians is that a wave of opposition to and distrust of medical practice is rolling over the country. The mental attitude underlying this opposition is probably less general than is sometimes indicated by open declaration but it exerts some influence. It has seemed at times that fairly intelligent people will endorse the radical opponents of the policies of medical organizations but when the attitude of supporters of the opposition is studied it is not rarely found that some who appear hostile really have faith in some one doctor or method of treatment. We have known persons who have voted against compulsory vaccination and yet have accepted the benefits of this treatment and some who rail at hospitals have been known to apply for admission when confronted with serious accidents or diseases especially amenable to surgical treatment. This illustrates some of the inconsistencies of human behavior and places responsibility upon the profession to study the reasons and if a remedy can be found, to apply it.

That proportion of practitioners which does not often come in contact with critics and doubters and which is fortunately occupied with a loyal and appreciative clientele finds little occasion for effort tending to disabuse warped minds. These doctors occupying high and impregnable positions can hardly appreciate the difficulties often met by those whose work is less remunerative and more competitive but who could, if so disposed, do a great deal toward enhancing the standing of the average doctor who is doing creditable work.

That criticism of individual doctors has a considerable influence in creating general distrust of the profession is probable and when this attitude is encouraged by members of the profession there is in this an added stimulus to prejudice.

One factor contributing to this prejudice is found in the unguarded or more rarely malicious criticism of another doctor's work. This behavior not only influences popular judgment but is placing a heavy burden on the profession at large, for it is believed that unwise remarks are responsible for many of the suits for damages against physicians. In conversation with a representative of one of the companies selling indemnity insurance, it was definitely stated by the agent that the company has found that the first inspirations leading to many suits can be found in the direct or implied criticism of the attending doctor by competitors or persons in subsequent charge of given cases. Only those conversant with the facts know that the tendency to sue doctors is growing in many states. This is in evidence especially in New England and the Central States of this country. One can easily imagine the fiendish joy of an unscrupulous competitor when he finds a doctor, for whom he has cordial dislike, the victim of a suit.

The situation has become so acute that the insurance companies will have to consider raising the premiums on indemnity policies unless something can be done to diminish the number of suits.

Each individual doctor should control his speech when brought into association with any person interested in a possible claim for damages.

All state medical societies are concerned in this growing tendency and while no one would advocate protecting a doctor against the just claims of an injured patient action should be taken to discourage any criticism of one doctor by another. Even when an unfortunate result of an accident or disease is found it is more than unjust to criticise the treatment under most circumstances. Criticism is not only in bad taste but may be a boomerang.

We believe that some scheme should be evolved which may cover those few cases where a competent doctor finds undoubted evidence of loss of life or unnecessary suffering following incompetent treatment and we suggest that in cases of this sort the medical societies should have committees to which the honest observer of a bad result could present the facts and be advised as to the wisest course to pursue.

We want the public to feel that we are not a trade's union organization which would protect the practitioner against the honest claims of one who has suffered at his hands but we do want the reputable doctor protected to the limit against fraud, blackmail and perjury.

THE CURE OF CANCER

Reference was made in the Journal to the long report of the alleged claims of Dr. Gye relating to the prevention of cancer July 19.

Dr. Gye claims to have shown that a serum has been produced which has secured immunity in chickens, rats and mice to the cancer virus and tumor cells. It is claimed that although no cure for cancer already present has been discovered, the eradication of cancer by an immunizing process is expected. These statements are modified by the assertion that "naturally a great amount of work remains to be done before the decisive step of experiments on man."

Further reports in the daily press tend to show that the address of Dr. Gye before the British Medical Association brought forth criticism relating to the relative importance of the discovery to human cancer and the technic of his work which seemed to some laboratory workers to have certain errors.

Dr. Gye admitted that the more serious cancers of the breast and stomach had not been produced by the methods employed and that the porcelain candle filters were not as trustworthy as had been regarded.

Dr. Gye is receiving offers of subjects for experimental purposes but is not ready to accept this material at present.

In order to avoid suspension of the work through the possible death of Gye or Barnard a body of technical experts is being organized and will be trained to deal with the cancer and other unsolved problems.

The work done by Gye and Barnard will be studied in this country by Dr. Benjamin Jablous under the direction of Dr. William H. Park as soon as the statements published in *The London Lancet* are at hand.

THE REGULAR QUARTERLY MEETING OF THE MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH

This meeting was held July 30, 1925, at the Atlantic House, Nantasket, and was attended by more than thirty representatives of Boards of Health and other allied organizations. After dinner the meeting was called to order by Dr. F. P. Denny, the usual routine business was transacted and a discussion of the smallpox problems followed.

The first paper was presented by Dr. W. F. Draper, Assistant Surgeon General, U. S. P. H. S., who reviewed the statistics relating to smallpox and gave a clear explanation of the attitude of the government in dealing with the disease and its oversight of the production of vaccine virus. The paper will be published in full in a later issue of the Journal. He was followed by Dr. Sanford B. Hooker who described the immunity reaction in smallpox showing that the susceptibility or immunity of an individual can be determined in much the same manner as is being employed in the Schick test for diphtheria. This paper was published in the Journal last week.

Dr. Benjamin White then explained the most approved technic and aftercare of vaccination. His paper appeared in the Journal of last week.

These papers led to a very general discussion of the problems incident to the prevention of smallpox, the dangers incident to vaccination, the treatment of those children whose parents desired to have them exempted from vaccination and the plans for securing more general vaccination.

Dr. Draper in answer to questions told of the investigations following the development of tetanus due to the use of dressing the vaccination sites with bunion pads. It was found that bunion pads have, as an adhesive, glue which is usually made from hoofs and horns of cattle and 25% of specimens examined were found to contain tetanus bacilli. Hence such dressings must be avoided. The consensus of opinion was that after using the method explained by Dr. White no dressing is required unless the vesicle or pustule is broken and then only recognized surgical technic can be employed safely.

The difficulty encountered by school boards when receiving exemption certificates was discussed and it was claimed that a decision of the Supreme Court left the question of the proper period of exemption under a given certificate to the school board. Several speakers reported that repeated exemption certificates were required by some school committees within a reasonable time thereby putting the responsibility and expense on the parents and that in many instances after paying doctors several fees for exemption certificates vaccination was permitted. One speaker affirmed that some exemption certificates are issued without subjecting the pupil to a physical examination and in one instance it was found that the specified condition had never existed.

Dr. Mahoney of the Boston Health Board explained the purpose and plans of the Boston Chamber of Commerce in dealing with the smallpox menace which, if not recognized and dealt with adequately, would mean that we are liable at any time to an outbreak which would seriously burden communities and interfere with industry. The interest in the subject and the convincing arguments of the speakers led to the adoption of the following resolution:

Resolved that the Massachusetts Association of Boards of Health should call the attention of the organized business and commercial interests of the State to the smallpox situation which has developed in the United States and Canada during the past few years and to the danger that employers of labor in this State may at any time be called upon to deal with outbreaks of malignant smallpox in factories, retail stores, hotels, restaurants or other commercial establishments and to the possibility of avoiding the detrimental effect of such an outbreak upon business, by immunization of employees by thorough vaccination of their employees in advance of a situation which may arouse public apprehension regarding the actual danger from smallpox.

The meeting then adjourned.

THIS WEEK'S ISSUE

Contains Articles by the Following Writers:

Frost, Harold M. "Hypertension and Longevity." Dr. Frost is a graduate of Brown University 1909 and Harvard Medical School 1915. He is Assistant Surgeon to Out Patients, Massachusetts General Hospital and Assistant Medical Director, New England Mutual Life Insurance Company.

Hunter, Francis T., A.B., A.M., M.D., (Harvard) has served as House Officer at the Huntington Memorial Hospital and is now Medical House Pupil at the Massachusetts General Hospital. He writes on "The Influence of Position on the Vital Capacity and Percentage of Supplementary Air in Normal Persons and in Patients with Large Spleens."

Zeckwer, Isolde T., A.B., M.D., who writes on "Chromaffin Cell Tumor of the Adrenal Medulla (Paraganglioma)" is Research Assistant, Department of Pathology, Harvard Medical School and Pathologist, Long Island Hospital, Boston.

Daland, Ernest M., A.B., M.D., is Out Patient Surgeon, Huntington Memorial Hospital and Assistant Out Patient Surgeon, Massachusetts General Hospital. His article is on "Infectious Granulomata from Abscessed Teeth."

Dameshek, William, M.D., Harvard 1923, author of "Typhus Fever," has recently completed his interneship at the Boston City Hospital, where he is now connected with the Blood Clinic; he is Assistant Visiting Physician, Boston Dispensary and Teaching Assistant in Theory and Practice at Tufts Medical School.

The Massachusetts Medical Society

MEMBERSHIP CHANGES

Greene, Ransom A., from Taunton (Bristol North) to Waverley (Middlesex South), Walter E. Fernald State School.

Pickwick, Erskine R., from the Newton Hospital, Newton Lower Falls, to the Hood Rubber Co. Hospital, Watertown.

Waite, J. Herbert, from Brookline (Norfolk) to Winchester (Middlesex East), 42 Fletcher St.

Dr. William G. LeFurgy has removed from Allston to Rockport, Me., where his address is 66 Central St.

William Dameshek's address is now 484 Commonwealth Ave., Boston.

Dr. V. H. Kazanjian has moved his Boston office from 224 to 475 Commonwealth Ave.

Dr. E. T. Saeger has returned from New York and has his office at 270 Commonwealth Ave., Boston.

Dr. Ewan A. Robertson has removed from Lowell (Middlesex North) to Newton (Middlesex South), where he has a residence at 125 Vernon St.

MISCELLANY

HEALTH EXPOSITION, GERMANY

A national exposition on health, social welfare, and physical training is to take place in Dusseldorf in 1926 under the auspices of the National Government and with the coöperation of the State governments and various private organizations. The purpose of the exposition is to point out to the German people the importance of proper care of the health, to enable them to meet their obligations in Germany and outside of it. More than 1,000 specialists in various fields are engaged in arranging for the exposition.

A VACATION CAMP CONDUCTED BY THE SOUTHERN WORCESTER COUNTY HEALTH ASSOCIATION

(Affiliated with the Massachusetts Tuberculosis League, Inc.)

BY ROY J. WARD, M.D.

The third successive season of the Worcester Children's Vacation Camp opened Monday, July 6th. In the July 23rd issue of the Boston Medical and Surgical Journal the Bristo County Health Camp claims priority as a non-official organization in coöperating with an official agency in conducting such a camp. The Southern Worcester County Health Association claim this priority in that they established their camp, the Worcester Children's Vacation Camp at Sterling Junction, in coöperation with the Worcester Board of Health in 1923 and have continued this arrangement since that time.

As there has been confusion in the minds of some concerning the personality of the Association the officers wish to announce that this association has no relationship with the National Health Association which was a Health Insurance Company and which failed some months ago.

The Southern Worcester County Health Association was organized three years ago as an affiliate of the Massachusetts Tuberculosis League which in turn is a branch of the National Tuberculosis Association. Its membership consists of physicians and laymen from the cities and towns of southern Worcester County and includes Drs. Kendall Emerson, President of the Massachusetts Tuberculosis League, Thomas Kenney, Director of Public Health, City of Worcester, and Oscar A. Dudley, District Health Officer of the State Department of Health. Its field of work is all of southern Worcester County and its activities are directed towards combating tuberculosis and incidentally through its educational propaganda, disease in every form. Its source of income is from the sale of Christmas seals which are furnished by the National Tuberculosis Association and from voluntary contributions from various clubs, churches and individuals.

The Association through its Executive Secretary, Mrs. Bessie P. Hanson, in coöperation with the State Department of Health has conducted clinics for the examination of the undernourished school children in the county towns, has arranged and conducted Health Shows and has estabished the Modern Health Crusade in a large per cent of the towns of the County. Its work in Worcester has been chiefly in conducting the Children's Vacation Camp at Sterling Junction. It was first established in 1923 at the Red Cross Lodge which is admirably adapted for such a camp and consists of a modern residence for a personal house, a two story barrack of forty rooms accommodating one hundred cots, a mess hall capable of seating 125 children with sleeping quarters for the help and a small building for a shower bath. It is situated on a hill overlooking a lake with several acres of cleared land and a small grove. The water supply is an artesian well with an automatic electric pump. For two years the Red Cross has given to the Association the free use of this estate but this year it has been unable to finance the property longer and very generously sold to the Association the entire estate for $1000 and the mortgages on it. Many repairs have been necessary but the Committee feels confident that Worcester and Southern Worcester County will provide the funds to take care of the extra expense so that this magnificent property can be used as a preventorium all the year around.

One hundred 10% or more underweight children or contact cases are selected by the school nurses and are taken to the camp every two weeks. The boys during July and the girls during August. At the camp they are weighed, measured and examined by Dr. Fred Gebhardt, a Tuberculosis expert from the State Department of Public Health and a Dental Hygienist cleans all the teeth. The diet is controlled by a dietician from the State Department of Public Health and dietetic and hygienic habits are taught every day. The Worcester Department of Public Health coöperates through its director and for three successive years has furnished the entire nursing force. Four hundred children are in this way thoroughly examined, given two weeks of supervised fun in the country and even during that short time are taught health habits so that they each gain from one to six pounds in weight and develop a resistance that lessens the frequency of disease after they return home. Our statistics show that the children that have this opportunity have less absences from school because of illness and also do better work at school. The percentage of positive and suspicious cases of hilum disease found by Dr. Gebhardt makes the committee feel that they are reaching the class of children who need this work most.

NOTES FROM THE BOSTON MEDICAL LIBRARY

It is not always the incunabulum which is the rarest or the most valuable book or tract.

Many medical texts of comparatively recent date are exceedingly scarce and historically very important. Among these may be mentioned Langerhans' dissertation on the pancreas, Withering on the foxglove, Thacher's broadside on small-pox, the various vaccination tracts, Charles Bell's "New idea," Jenner's vaccination, the early American pamphlets, early English imprints, early German tracts, the "Christianisimi restitutio" of Michael Servetus, the L'Admiral color prints, and the original octavo publications of Ambroise Paré.

These tracts of Paré are extremely scarce, much sought for and most impotrant.

The Library has just procured a very good copy of the "Dix livres de chirurgie," Paris, 1564. Complete copies of this work are of such extreme rarity that Malgaigne, Paré's bibliographer, did not know of a complete copy, in the French libraries or elsewhere in France, with the exception of his own copy.

The copy acquired by the Library is perfect except for one page of the index. It contains the engraved portrait and the two interesting skeleton plates.

The Library also owns copies of Paré's "Cinq livres de chirurgie," Paris, 1572, and the "Traicté de la peste, de la petite verolle et rougeolle," Paris, 1568.

Another interesting accession is a copy of Gautier, d'Agoty's "Cours complet d'anatomie," printed in natural colors at Nancy in 1773.

Recently there came in to the market in Italy a copy of the "Epitome" of Vesalius. Quick action on the part of the authorities procured this invaluable text for the Library.

The copy is absolutely complete and in fine condition. It consists of fourteen unnumbered leaves, the last two of which are usually missing, or, if existing, in bad condition. In this copy they are in perfect state. The copy is uncut and very tall, with exceptionally broad margins.

This work was printed with the intention of being used as single sheets and not to be bound as a book. The woodcuts on the last two leaves were intended to be cut out and superimposed on two large figures. This fact is responsible for their absence or bad condition in the majority of copies.

The "Epitome" was published in the same year as the 1543 "Fabrica," and its title is printed from the same plate as the 1543 "Fabrica." The "Epitome" contains the two beautiful plates of man and woman which are not contained in the Fabrica.

According to Dr. Harvey Cushing this copy is one of the best, if not the finest, in existence.

CONTRACT OF SMALLPOX

ALL the medical officers, nurses, and general staff of the Metropolitan Asylums Board who look after cases of smallpox occurring in London are efficiently vaccinated and re-vaccinated; not one of them has ever contracted the disease from the smallpox patients they have attended. —*Medical Press & Circular.*

RECENT DEATHS

OCHSNER—DR. ALBERT JOHN OCHSNER, Professor of Surgery in the University of Illinois College of Medicine, died of angina pectoris at Chicago, July 25, 1925, at the age of 67.

Dr. Ochsner had been chief surgeon of the Augustana Hospital and St. Mary's Hospital. He held a major's commission in the medical reserve of the United States Army and memberships in the American College of Surgeons, Royal College of Surgeons (Ireland), Royal Microscopical Society (England), and a fellowship in the American Surgical Association.

Dr. Ochsner was born in Baraboo, Wis., and was graduated from the University of Wisconsin and Rush Medical College of Chicago. He later studied in the universities of Vienna and Berlin. He was a former president of the American College of Surgeons. He was the author of works on appendicitis, clinical surgery, and organization, management and construction of hospitals. He is survived by his widow, a daughter, Bertha, who was present when he died, and by a son, Albert, who is in Virginia.

LINNELL—DR. EDWARD H. LINNELL of Norwich, Conn., a prominent homeopathic physician, died at Lyme, Conn., July 27, 1925. He was born in East Douglas, Mass., September 15, 1853, and was educated in Worcester and in the New York Homeopathic Medical College and Flower Hospital, where he was graduated in 1876. Then he studied in Germany. Dr. Linnell was credited with being among the first physicians in Connecticut to use radium.

CORRESPONDENCE

THE TRAINING OF NURSES

Editor, Boston Medical and Surgical Journal:

From time to time many schemes have been suggested for the proper training of nurses. These schemes have varied from slight modifications of the usual training schools to elaborate courses leading up to a university degree.

Feeling that the real solution lies somewhere between the two extremes, Boston University has effected an affiliation between its School of Education, and its School of Medicine, and the Massachusetts Homeopathic Hospital. As a result, it is possible for a young woman, with the necessary high school preliminary training, to obtain the technical training necessary in her profession, and at the same time to obtain university courses in the sciences and in the cultural subjects which will count towards an academic degree.

By reducing the amount of ward duty it is possible to carry on all three divisions of the work coincidently, and, at the successful completion of a three-year period, the student nurse can obtain a certificate.

If, however, she desires to spend additional time, she can become a candidate for the degree of Bachelor of Science in Education. The minimum time for the degree is approximately four calendar years from matriculation. The whole matter is, however, arranged on the basis of credits, and inasmuch as the work following the certificate is largely elective, it is probable that in certain cases the actual time spent will be somewhat increased.

While the plans are in an experimental state, there will be no tuition charged, and the hospital will provide board, room, laundry, and textbooks, and will allow a short vacation period during each year of training.

It is believed that the scheme presents interesting possibilities in that it offers an opportunity to give a broader, more scientific training to those who desire to spend only the minimum time, and at the same time it gives an opportunity for the student to take up some special field of work which will count towards her degree.

It would appear that to those taking the longer courses there would be an opportunity for a better background for institutional work of various sorts, and likewise for work in educational fields.

The first group under this arrangement started work February 1, and there is a larger group which will enter in September.

The affiliation places the academic supervision under the School of Education as the Department of Nursing. A catalog will very shortly be issued. This may be obtained by application to Dean Arthur H. Wilde, School of Education, Department of Nursing, Boston University.

Yours sincerely,
A. S. BEGG, *Dean,*
Boston University School of Medicine.

July 27, 1925.

RHODE ISLAND STATE BOARD OF HEALTH

CONTAGIOUS DISEASES REPORTED FOR THE WEEK ENDING JULY 18, 1925

Diphtheria	3	Scarlet fever	5
Measles	23	Smallpox	6
Whooping cough	4	Trichinosis	1
Chickenpox	1	Pneumonia	2
Typhoid fever	1	Trachoma	1
Poliomyelitis	1	Mumps	5

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

DISEASES REPORTED FOR THE WEEK ENDING JULY 25, 1925

Anterior poliomyelitis	2	Influenza	2
Chickenpox	35	Measles	175
Diphtheria	58	Mumps	7
Dog-bite requiring anti-rabic treatment	8	Ophthalmia neonatorum	38
		Pneumonia, lobar	13
German measles	26	Scarlet fever	41
Gonorrhea	136	Septic sore throat	1

Syphilis	31
Suppurative conjunctivitis	15
Tetanus	2
Trachoma	3
Tuberculosis, pulmonary	93
Tuberculosis, other forms	15
Tuberculosis, hilum	96
Typhoid fever	16
Whooping cough	153

NEWS ITEMS

ELECTION OF PRESIDENT AND SECRETARY OF THE ASSOCIATION OF AMERICAN PHYSICIANS—Dr. Richard P. Strong has been elected president and Dr. Francis W. Peabody secretary of this association.

THE HAZARDS OF AVIATION—Dr. Frederick L. Hoffman will undertake a study of aviation hazards with reference to life insurance in association with the Army and Navy services and other organizations in this country and abroad. This investigation has been instigated by Major-General Patrick. Dr. Hoffman can be reached at his office, Wellesley Hills, Mass.

DR. HENRY W. FRAUENTHAL of the Hospital for Joint Diseases of New York has sailed for London for the purpose of studying the claims made of the discovery of the cancer germ.

CHAIRMAN OF THE BOARD OF REGISTRATION IN MEDICINE ELECTED—At a special meeting of the Board of Registration in Medicine held July 30, 1925, Dr. John M. Birnie of Springfield, Mass., was elected chairman.

RESTORATION OF THE REGISTRATION OF DR. HORACE G. MACKERROW—At a meeting of the Board of Registration in Medicine held July 30, 1925, the registration of Dr. Horace G. MacKerrow of Worcester, which had been revoked, was restored.

NOTICE

EXAMINATION FOR ENTRANCE INTO THE REGULAR CORPS OF THE UNITED STATES PUBLIC HEALTH SERVICE

EXAMINATIONS of candidates for entrance into the Regular Corps of the U. S. Public Health Service will be held at the following-named places on the dates specified:

At Washington, D. C. ....September 14, 1925
At Chicago, Ill. ....September 14, 1925
At New Orleans, La. ....September 14, 1925
At San Francisco, Calif.... September 14, 1925

Candidates must be not less than twenty-three nor more than thirty-two years of age, and they must have been graduated in medicine at some reputable medical college, and have had one year's hospital experience or two years' professional practice. They must pass satisfactorily, oral, written and clinical tests before a Board of medical officers and undergo a physical examination.

Successful candidates will be recommended for appointment by the President with the advice and consent of the Senate.

Requests for information or permission to take this examination should be addressed to the Surgeon General, U. S. Public Health Service, Washington, D. C.

M. J. WHITE, *Acting Surgeon General.*

REPORTS AND NOTICES OF MEETINGS*

BEVERLY HOSPITAL

A DEMONSTRATION clinic was held at the Beverly Hospital, Tuesday, July 21st, at 4:00 P. M. The following interesting cases were shown and discussed:

Carcinoma of Pancreas. (two cases)
Carcinoma of the sigmoid and recto sigmoid.
Erythema nodosum.
Acute gangrenous appendicitis (late). (two cases)
Pernicious anemia.

Doctors were present from the surrounding cities and towns.

SOCIETY MEETINGS

NEW ENGLAND STATE MEDICAL SOCIETIES

The annual meetings of the New England State Medical Societies are scheduled as follows:

Vermont State Medical Society—St. Johnsbury, Oct. 15-16, 1925.

BOOK REVIEWS

Hand Atlas of Clinical Anatomy. By A. C. EYCLESHYMER, S.S., Ph.D., M.D., and TOM JONES, B.F.A. Lea & Febiger, Phila. & N. Y. 1925. $11.00. Illustrated with 395 line drawings mostly in color.

This atlas is an outgrowth of the one prepared under the title *"Manual of Surgical Anatomy"* for the use of the Army and Navy during the war. The new volume includes the anatomy of the female. It is divided into four sections, the head and neck, the chest and adomen, the upper extremity and the lower extremity. The illustrations for each section are arranged in the following order: (1) Projections or transparencies showing the deeper structures in relation to surface markings. (2) The various systems, as nerves, muscles, etc. (3) Regional dissections, showing all the structures in a given region. (4) Frontal, sagittal and transverse sections. (5) Surgical incisions.

One of the new features of the book is a series of cuts showing the position of muscles in relation to underlying structures and also their origins and insertions. At the end of the book there is an excellent medical index, which gives definitions of terms used and page references for the illustrations which show them.

**Notices of meetings* must reach the JOURNAL office on the Friday preceding the date of issue in which they are to appear.

The book is well adapted for the surgeon's use. Nothing but praise can be offered for the illustrations, their clearness and arrangement.

"Gynecology for Nurses." M. F. SEIFERT, A. B., M. D., F. A. C. S. D. Appleton & Company. 1925.

The author states in his preface that, "The only legitimate excuse for issuing a new book is the desire to present a new thought or an old subject in a new and practical form. The author believes that this volume compasses both of these features." The reviewer agrees with the first sentence but does not with the second. The book consists of some three hundred odd pages covering completely the field of Gynecology. Why should any such volume be written for nurses? Do they need to be taught the differential diagnosis of a normal perineum from a lacerated perineum, the pathology of chronic cervical endometritis, the diagnosis of sarcoma of the uterus or tuberculosis of the Fallopian tube—headings taken at random from the book. The reviewer does not believe it is necessary or advisable to teach nurses that one micron equals ten thousand Aengstrom units as the author does. Neither does the reviewer believe that a gruel for teething children is in place in diets in Gyncology. In no way will the book help the student or graduate nurse make the patient more comfortable after gynecological procedure.

"Physical Diagnosis of Diseases of the Chest." By JOSEPH H. PRATT, A.M., M.D. and GEORGE E. BUSHNELL, Ph.D., M.D. W. B. Saunders Co., Philadelphia, 1925.

This book comprises fifteen chapters on the physical diagnosis of diseases of the chest, and is divided into two sections, the first section of five chapters, written by Dr. George E. Bushnell, dealing with the physical diagnosis of diseases of the lungs, the second section of ten chapters, written by Dr. Joseph H. Pratt, dealing with the physical diagnosis of diseases of the heart. Both writers emphasize the fact that the study of physical diagnosis should begin with the normal chest. Considerable space has been devoted to this study, and a most excellent chapter is included on the localized peculiarities of the chest in health. In the section on the lungs, among the newer subjects discussed, are the resonator action of the thorax based upon physiological experimentation, the adventitious sounds of the costopleural sinus, of the chondrosternal articulations and of the sternum, and the role of tuberculous lymphangitis in tuberculosis of the lung. In the section on the examination of the heart the fundamentals of the newer physiology of the heart and circulation have been included, and their bearing on the explanation of physical signs. Throughout the book the point of view of the writers is that of the clinician whose chief interest is the recognition of disease as it presents itself at the bedside and in the consulting room. The book is a distinct contribution to the subject and should prove of great benefit to student and practitioner.

"The Personal Equation." By LOUIS BERMAN, M.D. The Century Co. New York, 1925. 303 pages.

Dr. Berman, in his early thirties, has carried his specialty, endocrinology, further than any of his most enthusiastic colleagues. Each paper or book from his pen has led us on to more phantastic heights until in his latest work, now under review, he has even gone so far as to classify all his fellow-men as gland-control marionettes. He not only cites cases from his own practice (which must be large in view of the popularity of gland literature and glandular therapy to prove his contention that the glands of internal secretion control personality, but he goes farther and attempts to make an endocrinological diagnosis from photographs of famous people. Our literary heroes, à la Freud, come in for special mention. John Keats, according to Dr. Berman, has an "thyroid-adrenal centered face." If Dr. Berman only lived in Keats' time and had the author of "Ode on a Grecian Urn" as a patient, how different a biography could have been written by the late Amy Lôwell! Shelley, of course, has a "thyroid-pituitary centered face." Woodrow Wilson, with his prognathous jaw, is of the pituitary centered type; Harding, adrenal centered.

This book will probably stimulate glandular therapy by physicians and others, and, more important perhaps, will lead a certain number of worthy people into that type of reasoning which has characterized some of the evidence presented in the recent Tennessee episode. The book is being widely advertised in popular magazines. Loose thinking has no place in the march of scientific thought. To the reviewer, no book on the subject of ductless glands and their products seems less worthy of perusal than this latest effort of Dr. Berman.

"The Science of Biology: An Introductory Study." By GEORGE G. SCOTT, Ph.D. Thomas Y. Crowell Company. New York, 1925. 617 pages.

Dr. Scott has written a comprehensive book on the biology of plant as well as animal life. He follows the usual methods of presenting the subject and the book is adequately illustrated. It is well written, well indexed, and each chapter carries an ample bibliography. A classification of plants and animals, and biographical notes on important biologists add a useful appendix. The book should be classed as a college text in biology, and as a handy and reliable reference book for physicians and teachers.